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# Reconstituting Land-Use Federalism to Address Transitory and Perpetual Disasters: The Bimodal Federalism Framework

Blake Hudson

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## Reconstituting Land-Use Federalism to Address Transitory and Perpetual Disasters: The Bimodal Federalism Framework

Blake Hudson\*

### ABSTRACT

*Scholars analyzing the intersection of federalism and disaster law and policy have primarily focused on the difficulties federalism poses for interjurisdictional coordination of disaster response. Though scholars have highlighted that rising disaster risks and costs are associated with “land-use planning that exacerbates, rather than mitigates, disaster risk,” a more holistic analysis of land-use-related disaster law and policy is needed. This Article provides a more comprehensive framework within which to analyze prospective mitigation or prevention of disaster risk and costs through a rebalancing—or reconstituting—of the respective roles of the federal and state governments in land-use planning. The federal government does not currently maintain direct regulatory inputs into a variety of land-use planning policies that exacerbate disaster risks and costs—a situation that likely results from the history of jurisprudence declaring that land-use regulation is the “quintessential state and local government” power under the Constitution. Even so, because of the national interests at stake and the greater capacity of the federal government to coordinate standards for disasters with very large interjurisdictional impacts, greater federal regulatory inputs for certain disasters are needed where state and local governments have failed to formulate standards. For other land-use-related disasters, federal inputs may be less necessary, though overlapping federal, state,*

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\* Assistant Professor of Law, Stetson University College of Law, Gulfport, Florida. For their comments and insights, I wish to thank Robin Craig, Hari Osofsky, Erin Ryan, Brigham Daniels, Dan Farber, Jim Chen, Lisa Grow Sun, Josh Fershee, and Bill Buzbee, although assertions made in this article are my own. I would further like to thank all of the participants of the BYU Law conference, “Disasters and the Environment,” as well as the BYU Law School for allowing me to participate in the conference. I would also like to thank the organizers of the Southeastern Association of Law Schools 2011 Annual Conference panel, “Land Use Law: Federal and Local Interactions” for allowing me to present this research and for providing valuable feedback incorporated into the article. Finally, I thank the excellent editors of the BYU Law Review for their wonderful suggestions, edits, and effort.

*and local government regulations can yield even more robust disaster mitigation and prevention policies.*

*This Article first categorizes the various disasters that implicate state and local government land-use planning along a “transitory-perpetual” spectrum. This spectrum provides a frame of reference for assessing which land-use-related disasters are more localized with shorter temporal effects, and which therefore may require fewer federal inputs, and those that have far longer temporal effects and larger interjurisdictional impacts of nationwide import, therefore requiring greater federal input. The spectrum further provides a framework for determining the viability, from a constitutional perspective, of federal regulatory inputs into land-use planning for which more federal inputs may be needed. This constitutional analysis is undertaken in the context of a theory of “Bimodal Federalism,” which integrates two modes of operation of modern U.S. federalism, acknowledging the trend toward the new “Dynamic Federalism” theory that normatively disregards separate constitutional spheres of authority for the state and local governments, while also incorporating the reality that remnants of “Dual Federalism” theory still inform constitutional jurisprudence related to certain subject matters—like land-use planning.*

*Finally, based upon the transitory-perpetual spectrum categorizations and informed by bimodal federalism analysis, this Article assesses the appropriate legislative mechanisms for reconstituting land-use disaster federalism. This Article hypothesizes that those disasters closer to the perpetual end of the spectrum also happen to be the ones for which top-down federal inputs into land-use policy are both more desirable and less constitutionally suspect. Correspondingly, for land-use-related disasters that are more transitory in nature, top-down federal inputs may be more constitutionally suspect, thus calling for a need to explore bilateral and horizontal mechanisms of reconstituting federalism for all categories of disaster.*

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## I. INTRODUCTION

*Disasters present important governance challenges because they rarely respect political and regulatory boundaries.*<sup>1</sup>

The headline read, “Minnesota Farmer Battles Gulf ‘Dead Zone’”<sup>2</sup>—an intriguing caption to say the least. How could a farmer

1. DANIEL A. FARBER ET AL., *DISASTER LAW AND POLICY* 75 (2d ed. 2010).

2. John D. Sutter, *Minnesota Farmer Battles Gulf ‘Dead Zone,’* CNN (Aug. 30, 2010),

from Minnesota directly and positively impact a resource over one thousand miles away? The article was about the 2010 dead zone in the Gulf of Mexico, one of the largest recorded dead zones in history, scientists say—about the size of the state of New Jersey.<sup>3</sup> The dead zone is caused largely by sedimentation and fertilizer containing nitrogen and phosphorus flowing to the ocean from farms all along the Mississippi river. These chemicals rob the water of oxygen, preventing sea life from respiring. Remarkably, 40% of the land in the United States drains into the Gulf of Mexico via the Mississippi River Valley.<sup>4</sup> The dead zone effectively pits farmers against fishermen because fertilizer runoff from farming operations ultimately has an aggregated, substantial effect on commercial fisheries in the Gulf. One of the most dramatic examples of fishery impacts are “suicidal shrimp” that actually leap onto the beach in search of oxygen only to die.<sup>5</sup> Commercial interests, however, are not all that are at stake in the Gulf. Scientists are worried that if yearly dead zones continue to grow, the Gulf’s entire ecosystem will reach a “tipping point” from which it may not recover.<sup>6</sup>

The Minnesota farmer in the story said he considered people who live and work near the Gulf of Mexico his “neighbors.”<sup>7</sup> The story highlighted the farmer’s recognition that “the land, water and air are inextricably tied and that the actions of one farmer can be felt thousands of miles away.”<sup>8</sup> The farmer’s perspective is unique, of course, as it is exceedingly difficult for most farmers in the Mississippi River Valley to acknowledge, much less establish a plan to rectify, the negative impacts that their activities have on a resource as distant as the Gulf.<sup>9</sup> Noting that he would “much rather eat wild

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[http://articles.cnn.com/2010-08-30/tech/gulf.dead.zone.minnesota.farm\\_1\\_dead-zone-gulf-shrimp?s=PM:TECH](http://articles.cnn.com/2010-08-30/tech/gulf.dead.zone.minnesota.farm_1_dead-zone-gulf-shrimp?s=PM:TECH).

3. *Id.*

4. *Id.*

5. *Id.*

6. *Id.*

7. *Id.*

8. *Id.*

9. Douglas R. Williams, *When Voluntary, Incentive-Based Controls Fail: Structuring a Regulatory Response to Agricultural Nonpoint Source Water Pollution*, 9 WASH. U. J.L. & POL’Y 21, 22 (2002) (“[Farmers] have not, however, been particularly good stewards of our water resources: excessive or inappropriate use of fertilizers and pesticides, soil erosion, habitat alteration, soil salinization, animal wastes, and rates of water usage are causing serious water quality problems throughout the country. Indeed, agricultural nonpoint source pollution is now considered the nation’s most persistent and most difficult water quality problem.”).

Gulf shrimp than farmed shrimp,” however, the Minnesota farmer decided to adjust his farming methods.<sup>10</sup> He stopped tilling his land in order to decrease nitrogen and phosphorus runoff. He planted alfalfa along the edge of his farm—alfalfa is a “greedy” plant that extracts most of the nitrogen and phosphorus before it gets to the waterway. He also, rather cost-effectively, placed a bioreactor in the ground near the stream that removes nitrates from the water.<sup>11</sup> It worked. The farmer’s yields actually went up, wildlife he had not seen in years returned, and the water in the area became clearer.<sup>12</sup>

Until more farmers engage in similar conduct, however, Gulf fishermen will not be happy. One commercial fisherman from Louisiana colorfully declared, “you s[hit] in the river, then you s[hit] down here . . . . They send us all the garbage; it comes down the river to us,” to create what he called “the cesspool of the nation.”<sup>13</sup> He continued, “The government ought to have a team of scientists working on that. How bad are they going to let it get before somebody stops it?”<sup>14</sup> Ultimately, the article concluded that more actions like those undertaken by the Minnesota farmer are necessary to prevent further degradation of the Gulf, and that “cleaning up the Gulf from the Midwest will require continental changes.”<sup>15</sup>

The story of the Minnesota farmer and the Gulf is emblematic of one of the primary legal complications for addressing environmental problems generally, and disasters like the Gulf dead zone specifically: the constitutional division of regulatory authority between the federal and state governments, or federalism. The federal government does not currently regulate many land-use activities related to farming, such as nonpoint source pollution from agricultural sediment and fertilizer runoff, a situation that likely results from the history of jurisprudence declaring that land-use regulation is the “quintessential state and local power” under the Constitution.<sup>16</sup> In turn, states are doing little in the way of exercising

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10. Sutter, *supra* note 2.

11. *Id.*

12. *Id.*

13. *Id.*

14. *Id.*

15. *Id.*

16. State governments maintain the primary responsibility to regulate land use under their authority to exercise the “police power” for protection of the “general welfare.” *See generally* *Mugler v. Kansas*, 123 U.S. 623 (1887). Scholars have noted that “[t]he weight of legal and political opinion holds that this allocation of power in [the U.S.] leaves the states in

their quintessential regulatory role to curb land-based pollution of the type affecting the Gulf. Thus in the Mississippi Valley we have a quintessential commons—in the absence of coordination, either among state and local governments or provided by a higher-level authority, such as the federal government, individual subnational governments refuse to address nonpoint source pollution, and their collective inaction damages the shared Gulf resource.<sup>17</sup> Indeed, disaster law in the context of land use presents an ironic scenario, as state and local governments resist federal involvement in land-use decision-making,<sup>18</sup> but after a major disaster occurs, state and local officials declare, as did one official after Hurricane Andrew struck Florida in 1992, “Where in the hell is the cavalry on this one?”<sup>19</sup>—and all of the cavalry’s money too, of course. When such disasters strike, the federal government may be called upon by any one of the nearly 89,000 subnational governments<sup>20</sup> for disaster relief, which totals billions of dollars each year in the United States alone.<sup>21</sup> A common refrain is “why doesn’t the federal government do something?” This is a completely justifiable question in the context of coordinating disaster response since state and local governments

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charge of regulating how private land is used,” JOHN R. NOLON, PATRICIA E. SALKIN & MORTON GITELMAN, *LAND USE AND COMMUNITY DEVELOPMENT* 17 (7th ed. 2008), and that “[l]and use law has always been a creature of state and local law,” Marci A. Hamilton, *Federalism and the Public Good: The True Story Behind the Religious Land Use and Institutionalized Persons Act*, 78 IND. L.J. 311, 335 (2003). The U.S. Supreme Court has recognized that “regulation of land use . . . is a quintessential state and local power.” *Rapanos v. United States*, 547 U.S. 715, 738 (2006); see also *FERC v. Mississippi*, 456 U.S. 742, 768 n.30 (1982) (“[R]egulation of land use is perhaps the quintessential state activity.”).

17. See Blake Hudson, *Federal Constitutions: The Keystone of Nested Commons Governance*, 63 ALA. L. REV. (forthcoming 2012).

18. Daniel D. Barnhizer, *Givings Recapture: Funding Public Acquisition of Private Property Interests on the Coasts*, 27 HARV. ENVTL. L. REV. 295, 339 (2003) (“[L]ocal governments historically have zealously guarded local control over land use.”).

19. Thomas Birkland & Sarah Waterman, *Is Federalism the Reason for Policy Failure in Hurricane Katrina?*, 38 PUBLIUS: J. OF FEDERALISM 692, 697 (2008), available at [http://www.mrterpak.com/uploads/5/1/5/9/5159930/is\\_federalism\\_the\\_reason\\_for\\_policy\\_failure\\_in\\_hurricane\\_katrina.pdf](http://www.mrterpak.com/uploads/5/1/5/9/5159930/is_federalism_the_reason_for_policy_failure_in_hurricane_katrina.pdf).

20. U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2011, at 267 tbl.427 (2011), available at <http://www.census.gov/compendia/statab/2011/tables/11s0426.pdf>.

21. FARBER ET AL., *supra* note 1, at 3. Worldwide, the cost of disaster was below \$25 billion annually in 1975, but was over \$150 billion in 2005. See U.N. INT’L STRATEGY FOR DISASTER REDUCTION, 2005 DISASTERS IN NUMBERS 1 (2005), available at <http://cnre.vt.edu/lsg/intro/2005-disaster-in-numbers.pdf>.

cannot be expected to have the manpower or resources to adequately respond to such large-scale disasters.

Oftentimes, however, state and local governments are complicit in the extent of a disaster's human and economic costs because they fail to mitigate those losses by engaging in more responsible, environmentally conscious land-use planning. Take, for example, Bay St. Louis, Mississippi officials who recently sought to remove markers along the interstate denoting the high-water flood mark reached during Hurricane Katrina.<sup>22</sup> The extent of Katrina's destruction was in no small part due to urban and agricultural development of floodplains that destroyed natural wetland buffer systems. The floodwaters from Katrina in this particular area were so high that they reached the overhead span where Interstate 10 crossed *over* another highway.<sup>23</sup> Even so, a Bay St. Louis councilmember believed that "the markers are detrimental to attracting businesses that might want to relocate [in the area], especially on undeveloped property around the interstate."<sup>24</sup> In fact, "[s]ome city leaders envision the interstate property as a magnet that will pull in restaurants, motels, and big-box retailers."<sup>25</sup> These commercial establishments may very well be under water during the next Katrina, but local government officials and economic development interests want to keep that information hidden from passersby. In this way communities often want the federal government to bail them out of disaster crises that they themselves are complicit in exacerbating.

Disaster Law and Policy scholars have recognized that rising disaster risks and costs are largely associated with "land use planning that exacerbates, rather than mitigates, disaster risk."<sup>26</sup> Despite this recognition, scholars have not provided a holistic framework within which to assess how land-use-related federalism issues might best be resolved to aid disaster mitigation and prevention. A holistic theoretical assessment is warranted especially because society

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22. The Associated Press, *Bay St. Louis Officials Oppose Hurricane Katrina High-Water Markers on Highway*, NOLA.COM (July 23, 2011, 9:00 PM), [http://www.nola.com/katrina/index.ssf/2011/07/bay\\_st\\_louis\\_officials\\_oppose.html](http://www.nola.com/katrina/index.ssf/2011/07/bay_st_louis_officials_oppose.html).

23. *Id.*

24. *Id.*

25. *Id.*

26. FARBER ET AL., *supra* note 1, at 10.



continues to witness an increase in disasters associated with land use as population grows and the land base is further developed.

Not only do well-recognized land-use-related disasters need to be studied more holistically, but society also faces a variety of new disaster challenges for which it must formulate policy responses. For example, how does sea-level rise associated with climate change shift the debate about the appropriate role of the federal government in land-use planning in coastal areas likely to be inundated? Should the federal government leave it to state and local governments alone to resolve, even if greater long-term costs will accrue to the federal government in response efforts? Or should the federal government have a greater say in land-use decision making in order to mitigate the devastating effects of sea level rise along the coast? Similarly, society continues to gain new insights into well-recognized land-use-related disasters that call for innovative policy responses. For example, wetlands along the coast of Louisiana have long been subject to a certain level of federal regulatory involvement, primarily in the form of the Clean Water Act's 404 wetland fill permitting program.<sup>27</sup> Hurricane Katrina, however, exposed more clearly than ever the impacts, social and economic, of aggregated individual land development projects facilitated by state and local planning that filled in wetlands and destroyed a key hurricane buffer system. This raises questions about how seriously we have taken the role of the federal government in staving off those types of disasters, especially considering the Army Corps of Engineers high issuance rate of wetland fill permits.<sup>28</sup> The same can be said for the development of floodplains along the Mississippi River that have greatly exacerbated the destruction caused by flood events.

Ultimately, though scholars have discussed how federalism has complicated disaster *response*, due to questions of appropriate

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27. 33 U.S.C. § 1344 (2006).

28. The Corps receives an average of over 80,000 permit requests annually; of these, only about 9% are required to go through a "detailed evaluation for an individual permit"; most are approved through a nationwide or region-specific permit. Of the 9% that have to file for an individual permit, less than 0.3% are denied. In Louisiana alone, between 1988 and 1996, 99% of all permit applications were granted, including 92% in flood disaster areas. Brandee Ketchum, Note, *Like the Swamp Thing: Something Ambiguous Rises From the Hidden Depths of Murky Waters—The Supreme Court's Treatment of Murky Wet Land in Rapanos v. United States*, 68 LA. L. REV. 983, 1011–12 (2008) (footnotes omitted). In addition, the EPA only exercised its power to veto the Corps wetland permitting eleven times between 1972 and 2007. CRAIG PITTMAN & MATTHEW WAITE, PAVING PARADISE: FLORIDA'S VANISHING WETLANDS AND THE FAILURE OF NO NET LOSS 167 (2009).

jurisdiction, lack of coordinated response, and similar difficulties created by multiple jurisdictions attempting to provide relief after disaster strikes,<sup>29</sup> this Article seeks to provide a holistic theoretical framework within which to address problems of land-use-related disaster mitigation and prevention. Part II provides a brief overview of various disasters that implicate direct land-use planning, currently considered the sole regulatory purview of state and local governments, and then categorizes these disasters along a spectrum from “transitory” to “perpetual,” to provide a mechanism for assessing which types of disasters might warrant greater federal involvement relative to subnational controls. While this overview does not constitute an exhaustive list, it does provide a foundation for categorizing land-use-related disasters for more comprehensive future study. In addition, this discussion recognizes that both federal and subnational policy components need adjusting to formulate effective disaster mitigation and prevention policies related to land-use planning, as the federal, state, and local governments are complicit in either establishing policies promoting poor land-use planning or not intervening with more stringent land-use planning standards. Part III begins with a discussion of the “Bimodal Federalism” framework which more appropriately captures the current scope of respective federal-state regulatory roles by integrating the dynamic theory of federalism with remnant dualist notions of federalism that still impact land-use law and policy across governance scales. Part III then discusses the available methods for “reconstituting federalism” for these different categories of disaster considering the bimodal federalism framework—that is, positing cursory hypotheses regarding both the need for and the most constitutionally viable means of gaining greater federal inputs into certain categories of land-use-related disaster mitigation and prevention. Part IV concludes.

## II. DISASTERS THAT IMPLICATE LAND-USE PLANNING AND THE TRANSITORY-PERPETUAL DISASTER SPECTRUM

A variety of disasters implicate land-use planning, which has long been considered the exclusive constitutional purview of state and local governments. These disasters may be placed along a spectrum from transitory to perpetual. Transitory disasters occur periodically

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29. See generally Birkland & Waterman, *supra* note 19.

and have effects that are generally limited to smaller geographic scales, with fewer jurisdictional spillover effects. On the other end of the spectrum are perpetual disasters, which may be gradual but are continual, making it exceedingly difficult to see their effects across narrow temporal scales—even though they eventually lead to crises and destruction of nationwide effect. As a result, these disasters have far greater jurisdictional spillover effects and nationwide implications. Some disasters fall within a “gray area” between the transitory and perpetual ends of the spectrum, due to greater frequency or durational impact, or both. For example, these disasters may technically be transitory, in that there is a temporal break between disaster events, but they can occur so frequently as to mimic perpetual disasters and can recur for a long enough period of time to cause nationwide impacts and warrant greater national interest. An example would be Gulf hurricanes, which, over decades, occur with regularity and often lead to enormous federal government expenditures in the form of disaster relief. Similarly, some disasters may only occur once, or far less often than do “pure” transitory disasters, but the durational impact is of a tremendous magnitude with nationwide implications. An example would be an explosion or reactor failure at a nuclear plant. Each of these different types of “gray area” disasters along the spectrum operate for a conceptually severed period of time just like perpetual disasters, with long-lasting aftereffects. And, of course, a disaster can both be of the high frequency variety and have great durational impact, like Hurricane Katrina.

To be clear, the groups into which these disasters are categorized are not mutually exclusive, and the categorization of each depends upon the case-specific circumstances presented over time regarding any one type of disaster. In addition, the disasters themselves are not mutually exclusive in occurrence, meaning that hurricanes cause flooding; hurricanes and earthquakes can cause nuclear plant incidents; heat waves can cause fires; and climate change contributes to sea-level rise, the spread of invasive species, the frequency and severity of hurricane events, and localized heat waves. The categorization undertaken below, therefore, is merely meant to provide a *general* framework within which to analyze which disaster events might require greater federal inputs into land-use planning for disaster mitigation and prevention and the most constitutionally viable mechanisms for doing so.

*A. Transitory Disasters**1. Localized flooding*

*The best means of limiting flood damages to human development is to keep the development away from high-risk areas.*<sup>30</sup>

Localized flooding has plagued civilization for as long as there have been permanent settlements. Societies require access to water to survive. As a result, early settlement patterns along river courses, near bays and estuaries, within other watersheds, and along the coast remain with us today.<sup>31</sup> To obtain the rewards that accompany living in these areas, societies also must live with the risks, including flooding. Floods cause more damage in the aggregate than virtually any other natural disaster.<sup>32</sup> Measurable flood-related losses are now greater than \$4 billion a year.<sup>33</sup>

As with most disasters, the structure of modern society has exacerbated flood risks and costs. The simple math of rising populations means more people live in flood-prone areas. In addition, urban development and the human-built environment have further intensified flood damages. Not only does development increase the amount of impermeable surface in an area, thus “increasing the quantity and speed of runoff from rain and melting snow . . .”,<sup>34</sup> but it also eliminates floodplains and wetlands that would otherwise absorb floodwaters.<sup>35</sup> The risks of flooding will only increase as populations increase. Currently there are over 125 million housing units in the United States, with all the attendant impervious surfaces (such as roofs and parking lots) that contribute to flooding (and pollutant) disasters.<sup>36</sup> By 2040, the United States will need 70

30. Barnhizer, *supra* note 18, at 337.

31. FARBER ET AL., *supra* note 1, at 23.

32. See Oliver A. Houck, *Rising Water: The National Flood Insurance Program and Louisiana*, 60 TUL. L. REV. 61, 62 (1985) (“Flooding is the most frequent and the most costly natural catastrophe in the United States, if not the world. Nine of every ten natural disasters in this country are flood-related.”).

33. Barnhizer, *supra* note 18, at 306.

34. FARBER ET AL., *supra* note 1, at 24.

35. U.N. INT’L STRATEGY FOR DISASTER REDUCTION, 2009 GLOBAL ASSESSMENT REPORT ON DISASTER RISK REDUCTION: RISK AND POVERTY IN A CHANGING CLIMATE 72 (2009), available at [http://www.preventionweb.net/english/hyogo/gar/report/documents/GAR\\_Chapter\\_3\\_2009\\_eng.pdf](http://www.preventionweb.net/english/hyogo/gar/report/documents/GAR_Chapter_3_2009_eng.pdf).

36. Arthur C. Nelson & Robert E. Lang, *The Next 100 Million*, 73 PLAN. 4, 4 (2007).

million more housing units, and 40 million of these will be built on new residential lots.<sup>37</sup>

As discussed below in Part II.C, it is true that flooding events in certain large watersheds might more appropriately fit in the gray area between transitory and perpetual disasters. Furthermore, localized flooding is directly related to other “gray area” and perpetual disasters discussed below, such as hurricanes and sea-level rise. Yet, due to the typically localized nature of day-to-day weather patterns, most flooding events are limited in geographic and jurisdictional scope. As a result, land-use planning standards of local governments, which are ultimately directed (or not directed) at the state level, have the potential to either mitigate or exacerbate localized flooding events occurring within jurisdictional boundaries.

In addition to the Bay St. Louis example highlighted in the Introduction, consider the severe flooding in Missouri in 1993. Missouri spent the next ten years facilitating \$2.2 billion of investment into new development on land that had been underwater during the floods. To this day, Missouri does not maintain comprehensive floodplain management legislation, and local officials “are attracted to the clarion call of tax revenue and job creation.”<sup>38</sup> One local Missouri councilwoman exhibited a “race-to-the-bottom” mentality by stating her community had “in the past . . . hugged a lot of trees, and we’ve lost out on a lot of development. We’re going to be surrounded by businesses while we’re looking at flood plain.”<sup>39</sup>

Missouri not only passively refused to intervene in the development of floodplains, but it has actively encouraged new development in floodplains by funding the construction of new levees. This is despite the “virtual consensus among floodplain managers that current floodplain management relies too much on structural solutions”—that is, building codes and additional levees—rather than “nonstructural solutions,” such as prohibitions on development or even relocation of some communities out of flood zones.<sup>40</sup> As a result, “[s]tricter, wiser land use restrictions are widely

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37. *Id.*

38. FARBER ET AL., *supra* note 1, at 34–35 (citing Christopher Carey, *Cities Look to Flood Plains for Jobs, Growth, Tax Dollars*, ST. LOUIS POST-DISPATCH, July 29, 2003, at A1).

39. *Id.*

40. *Id.* at 28.

viewed as the most critical and indispensable element of effective floodplain management moving forward.”<sup>41</sup>

The responsibility for localized flooding exacerbated by human-built capital is not limited to subnational governments. Rather, it is shared with the federal government. Indeed, “private decisions to live and work in hazardous locations are shaped by local land use policies, and those local land use decisions are, in turn, heavily influenced by state and federal incentives.”<sup>42</sup> Missouri’s investment in the levee system was actually subsidized by the federal government, and such subsidies have historically been the typical federal contribution to floodplain management. In Missouri’s case, federal government representatives stated, “[w]e don’t make a value judgment on whether that property should be protected . . . . As long as people can show they can meet the requirements, they’ll get a permit, whether we like building in the flood plain or not.”<sup>43</sup>

As Professor Barnhizer has argued, governments at all levels continue to “expend hundreds of millions of dollars annually to repair repeated and foreseeable damage to unwise and unsustainable private development and public infrastructure and facilities. Instead of limiting flood-plain development, those policies and practices continue to maintain development against rising sea levels, climate change, extreme weather phenomena, and erosion.”<sup>44</sup> Barnhizer cites flood insurance, construction of flood control structures like levees and dams, and “liberal” disaster relief policies as warping risk perceptions and, in turn, warping the value of property in floodplains.<sup>45</sup> Property values are artificially inflated, making it much more expensive for the government to pay “just compensation” if it decides to purchase property to recapture flood control values and mitigate flood damage. In other words, “[t]hese artificially enhanced

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41. *Id.* Floodplain managers have argued that “avoidance of floodprone and/or ecologically sensitive areas should be axiomatic in planning new development . . . . We need to begin a pattern of gradual and voluntary resettlement of those portions of communities that already have been located in the highest-risk or most ecologically sensitive areas . . . .” ASS’N OF STATE FLOODPLAIN MANAGERS, FLOODPLAIN MANAGEMENT 2050, at 33 (2007).

42. FARBER ET AL., *supra* note 1, at 25–26.

43. Sara Shipley, *Unprecedented Growth in the Flood Plain Brings Riches and Risks; Business Grows on Land Under Water 10 Years Ago*, ST. LOUIS POST-DISPATCH, July 27, 2003, at A1 (quoting Alan Dooley, a spokesman for the Army Corps of Engineers’ St. Louis District).

44. Barnhizer, *supra* note 18, at 296.

45. *Id.* at 296–97.

values result in a form of ‘double dipping’ by landowners. . . . Such double-dipping dramatically increases government costs of floodplain management by requiring double payments, both for ineffective past flood responses and for the costs of correcting those past mistakes through property acquisition.”<sup>46</sup>

Another example of the federal government’s complicity in exacerbating localized flood risk and destruction related to land-use planning is the National Flood Insurance Program (NFIP). After Hurricane Ivan, the federal government encouraged residents to rebuild in disaster prone areas by paying out \$15 million through the NFIP; after Katrina, the amount increased to \$44 million.<sup>47</sup> The NFIP mandates artificial insurance rates which are “not actuarially based [and] have subsidized development in hazardous areas [] by ensuring that developers can build in floodplains confident that they can obtain relatively low-cost, below market insurance against any flood risks.”<sup>48</sup> Indeed, the complicity of both the federal and state governments in exacerbating disaster risks and costs is a theme that runs throughout nearly every category of disaster discussed below, as “state and federal land use and development policies that have fostered improper rebuilding back in hazardous areas and impede prospects for sensible, local, predisaster planning.”<sup>49</sup>

## 2. Fires

Forest and brush fires are also typically disasters with more localized effects. Thus, land-use policies related to zoning of residential and commercial development can impact the degree of harm and costs caused by fire events. State forest and brush management standards can also play a role, as they may or may not dictate rules regarding prescribed burns or other methods of removing copious quantities of fuel that can build up and make fires far more severe.

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46. *Id.* at 297 (footnote omitted) (quoting Edward Thompson, Jr., *The Government Giveth*, ENVTL. FORUM, Mar.–Apr. 1994, at 22, 26).

47. Kevin Ramakrishna, Comment, *Subduing the Ceaseless Storm: Breaking the Build-Destroy-Rebuild Cycle Following Major Catastrophes Through Taxation and Responsibility*, 2 ALB. GOV’T L. REV. 328, 341 (2009).

48. FARBER ET AL., *supra* note 1, at 32.

49. Philip R. Berke & Thomas J. Campanella, *Planning for Postdisaster Resiliency*, 604 ANNALS AM. ACAD. POL. & SOC. SCI. 192, 195 (2006).

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Sometimes policies placing development in or around fire-prone areas and methods for controlling fires can converge in a negative way—especially when neither is carried out effectively. For instance, a controlled burn in New Mexico in May 2000 raged out of control, largely because it was started during a severe drought and when winds were high. The damage from the fire was greater than it might have otherwise been because of its proximity to the city of Los Alamos.<sup>50</sup> The fire destroyed or damaged more than 439 homes, numerous businesses, and 7 million trees, resulting in an estimated \$1 billion in total damages.<sup>51</sup> Furthermore, more than 1000 families suffered damages, while approximately 18,000 residents were forced to evacuate.<sup>52</sup> As Farber et al. note,

The proximity of communities to wildlands puts those communities at risk for catastrophic fires and limits options for wildland fire management by increasing the riskiness of prescribed burns and by pressuring [managers] to suppress all fires on wildlands that threaten urban development, even when good forest management practices dictate allowing the fire to burn to reduce the risk of more catastrophic fires.<sup>53</sup>

Yet we continue to build in fire-prone areas. By 2030, the fire-prone areas of the western Rocky Mountains are expected to see the construction of 2.2 million new homes.<sup>54</sup> And, once again, as with flooding, we see federal and state complicity in undermining effective disaster mitigation and prevention policies. State and local governments expect the federal government to throw money at fire suppression programs, even when subnational governments' failure to exercise their constitutional regulatory authority over zoning *increases* federal fire suppression costs, which are already nearing \$1 billion annually.<sup>55</sup> Ultimately, without federal inputs into land-use planning related to fire risk, we must rely on the volition of state and local governments and private individuals to make responsible residential and commercial development choices, even though these entities "have done little to protect themselves."<sup>56</sup> As a result,

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50. FARBER ET AL., *supra* note 1, at 6.

51. *Id.*

52. *Id.*

53. *Id.* at 41.

54. *Id.* at 43.

55. *Id.* at 44.

56. *Id.*



“[m]andatory zoning and building regulations may be needed to compel landowners to take the actions necessary to protect their homes and property from wildfire.”<sup>57</sup>

One last point should be made regarding fire-related land-use planning. Demonstrating the generally more localized geographic nature of wildfires, wildfire disasters are by and large limited to much drier western state jurisdictions west of the 100th meridian, which splits the state of Texas, and the rest of the country, into a “dry” western half and a “wet” eastern half.<sup>58</sup> So, while the southeastern United States, for example, has some of the least stringent forest management standards in the world,<sup>59</sup> including lax standards related to fuel removal, such standards may be less necessary considering the reduced likelihood of fire. Even so, and especially in a time of climate change, fires do occur in the Southeast and may occur with increasing frequency. The recent wildfire in Gulf Shores, Alabama, for which a state of emergency was declared, resulted in requests for both state and federal funds to address the disaster.<sup>60</sup> Similarly, fires on the “wet” side of Texas have recently burned thousands of acres and threatened both residents and municipalities, destroying hundreds of homes and taking numerous lives.<sup>61</sup>

### 3. *Heat waves*

Impervious surfaces and other attributes of the human-built environment contribute to more than just flood-related disaster events. Urban development in the form of rooftops, roadways, and parking lots can also increase the ambient temperatures of a location—an effect known as the “urban heat island.” The urban

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57. *Id.*

58. JAMES RASBAND, JAMES SALZMAN & MARK SQUILLACE, *NATURAL RESOURCES LAW AND POLICY* 745 (2d ed. 2009).

59. See CONSTANCE L. McDERMOTT, BENJAMIN CASHORE & PETER KANOWSKI, *GLOBAL ENVIRONMENTAL FOREST POLICIES: AN INTERNATIONAL COMPARISON* 327 (Jeffrey A. Sayer ed., 2010).

60. Libby Amos, *State of Emergency Declared for Baldwin Co.*, FOX10TV (last updated June 28, 2011, 8:38 AM), [http://www.fox10tv.com/dpp/news/local\\_news/baldwin\\_county/state-of-emergency-declared-for-baldwin-co](http://www.fox10tv.com/dpp/news/local_news/baldwin_county/state-of-emergency-declared-for-baldwin-co).

61. See, e.g., CNN Wire Staff, *Wildfires Rip Through Sun-Scorched Texas*, CNN (Sept. 5, 2011, 10:56 PM), <http://tinyurl.com/4yhby2f>; *30 Homes Destroyed in Grimes County Fire*, THE EAGLE (June 20, 2011, 3:28 PM), <http://www.theeagle.com/local/30-homes-destroyed-in-BV-fire>; Matthew Watkins, *Grimes County Fire Burns 5,000 Acres; Leaves ‘Total Devastation’*, TEXAS FIRE (June 21, 2011), <http://www.texas-fire.com/2011/06/grimes-county-fire-burns-5000-acres-leaves-total-devastation/>.

heat island effect “can elevate the temperature of ‘paved over’ urban areas more than twenty-two degrees Fahrenheit over surrounding rural areas” and “can increase the risk of heat waves, already one of the most deadly natural hazards.”<sup>62</sup>

On a hot, sunny summer day, surfaces such as roofs and pavement can be 50 to 90 degrees Fahrenheit hotter than the surrounding air,<sup>63</sup> while shaded or moist surfaces found in more rural settings remain close to air temperatures.<sup>64</sup> The average difference in daytime surface temperatures in rural versus urban areas is 18 to 27 degrees Fahrenheit,<sup>65</sup> and the mean air temperature in large cities may be 1.8 to 5.4 degrees Fahrenheit warmer than surrounding undeveloped areas.<sup>66</sup>

Urban heat islands lead to a variety of ills, including increased energy consumption, increased emissions of air pollutants and greenhouse gases, negative human health effects, and impaired water quality. Heat islands can lead to disaster during extreme heat waves, especially since increased demand for cooling may overload electrical generation systems. In 1995, a summer heat wave in the Midwest caused more than one thousand deaths.<sup>67</sup> Indeed, the Center for Disease Control and Prevention estimates that “from 1979 to 1999, excessive heat exposure contributed to more than 8,000 premature deaths in the United States . . . exceed[ing] the number of mortalities resulting from hurricanes, lightning, tornadoes, floods, and earthquakes combined.”<sup>68</sup>

State and local governments may implement a variety of strategies to address urban heat islands. They can zone both commercial and residential developments to include more trees and vegetation. Trees help regulate temperature by trapping moisture

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62. FARBER ET AL., *supra* note 1, at 24 (citing EPA, *Heat Island Effect*, EPA.GOV (last updated Sept. 23, 2011), <http://www.epa.gov/hiri/> and Kevin A. Borden & Susan L. Cutter, *Spatial Patterns of Natural Hazards Mortality in the United States*, 7 INT’L J. HEALTH GEOGRAPHICS 64 (2008)).

63. EPA, REDUCING URBAN HEAT ISLANDS: COMPENDIUM OF STRATEGIES: URBAN HEAT ISLAND BASICS 2 (2010), *available at* <http://www.epa.gov/heatisland/resources/pdf/BasicsCompendium.pdf>.

64. *Id.*

65. *Id.*

66. *Id.* at 1.

67. *Id.* at 14 (citation omitted).

68. *Id.* at 15 (citing *Extreme Heat: A Prevention Guide to Promote Your Personal Health and Safety*, CDC (last updated July 31, 2009), [http://www.bt.cdc.gov/disasters/extremeheat/heat\\_guide.asp](http://www.bt.cdc.gov/disasters/extremeheat/heat_guide.asp)).

and cooling the earth's surface.<sup>69</sup> As a result, trees are an efficient and cost-effective energy conservation option, and have been called "nature's air conditioners."<sup>70</sup> A single tree "can transpire 100 gallons of water from its leaves per day. The cooling provided by this amount of evaporation would be equivalent to five average room air conditioners running 20 hours per day."<sup>71</sup>

The average homeowner can harness the services provided by trees to save up to 20 percent on annual air conditioning costs.<sup>72</sup> As a personal anecdote, I never considered that one type of urban sprawl could be so much superior to another until I moved from Houston, Texas to Florida. Houston has no zoning and largely no trees breaking the seemingly unending pavement of commercial parking lots, but in Florida many, if not most, municipalities require trees and other greenery to be incorporated into commercial developments. In August it makes a difference.

One study found that cities that purposefully incorporate trees into land-use planning may accrue benefits of over four dollars for every dollar invested.<sup>73</sup> In addition to incorporating greater amounts of natural capital into urban developments, state and local governments can implement land-use planning that incorporates green roofs, cool roofs, and cool pavements into commercial and residential developments. These emerging technologies have been increasingly touted as mechanisms to reduce higher temperatures associated with the urban heat island effect.<sup>74</sup>

### *B. Perpetual Disasters*

#### *1. Sea-level rise*

Sea-level rise is perhaps the quintessential perpetual disaster, and scholars have highlighted that climate change, the source of more rapid sea-level rise in the recent past and future, may be

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69. RASBAND ET AL., *supra* note 58, at 1208.

70. TIVON E. FEELEY & PAUL H. WRAY, IOWA STATE UNIV., UNIV. EXTENSION, FORESTRY EXTENSION NOTES: ENVIRONMENTAL EFFECTS OF WOODY VEGETATION 1 (Aug. 2005), *available at* <http://tinyurl.com/6pq32tl>.

71. *Id.*

72. *Id.* at 2.

73. KELAINE E. VARGAS ET AL., USDA, INTERIOR WEST COMMUNITY TREE GUIDE: BENEFITS, COSTS, AND STRATEGIC PLANTING 39 (2007) *available at* [http://www.fs.fed.us/psw/publications/documents/psw\\_gtr205/psw\\_gtr205.pdf](http://www.fs.fed.us/psw/publications/documents/psw_gtr205/psw_gtr205.pdf).

74. *Id.* at 5.

characterized as nothing more than “a slow-moving disaster.”<sup>75</sup> Sea-level rise is indeed a slow process, and plays out incrementally over human life spans. Over the past century, sea levels rose .17 meters,<sup>76</sup> a rate of roughly 1.7 mm/year. Yet satellite imagery demonstrates that the rate increased to 3.1 mm/year between 1993 and 2003.<sup>77</sup> This increased rate corresponds with increases in atmospheric concentrations of greenhouse gases and temperatures; thus, the future impact of a changing climate on sea levels is highly variable. A recent report noted that “[p]rojections of sea-level rise for the twenty-first century vary widely, ranging from several centimeters to more than a meter.”<sup>78</sup> Given increasing global temperatures and the rapid loss of Arctic and Antarctic ice sheets, however, these estimates may very well be revised upward.<sup>79</sup> Ultimately, “warming and sea-level rise will continue for more than a millennium, even if carbon dioxide concentrations are stabilized, due to the long time required to remove this gas from the atmosphere.”<sup>80</sup> As a result, “rising sea levels . . . will ensure increased damage along increasingly developed shorelines,”<sup>81</sup> as rising seas “inundate low areas and increase flooding, coastal erosion, wetlands loss, and saltwater intrusion into estuaries and freshwater aquifers.”<sup>82</sup> Rising sea levels “interact with tides and storms to create more destructive impacts, as extreme high water levels occur with more frequency.”<sup>83</sup>

Around fifty-eight thousand square kilometers of coastline along the Atlantic Ocean and Gulf of Mexico lie less than 1.5 meters above sea level. More than 80 percent of these low-lying areas are in the states of Louisiana, Florida, Texas, and North Carolina, with North Carolina alone having as much land within one meter of sea level as

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75. JOSH EAGLE & MEG CALDWELL, COASTAL LAW 31 (2011).

76. Christophe A.G. Tulou et al., *Climate Change and the Marine Environment*, in OCEAN AND COASTAL LAW AND POLICY 571, 575 (Donald C. Baur, Tim Eichenberg & Michael Sutton eds., 2008).

77. *Id.*

78. U.S. CLIMATE CHANGE SCIENCE PROGRAM & THE SUBCOMMITTEE ON GLOBAL CHANGE RESEARCH, COASTAL SENSITIVITY TO SEA-LEVEL RISE: A FOCUS ON THE MID-ATLANTIC REGION IX (2009) [hereinafter U.S. CLIMATE CHANGE SCIENCE PROGRAM], <http://www.climatescience.gov/Library/sap/sap4-1/final-report/default.htm#finalreport>.

79. Tulou et al., *supra* note 76, at 575.

80. *Id.* at 576.

81. *Id.* at 578.

82. U.S. CLIMATE CHANGE SCIENCE PROGRAM, *supra* note 78, at IX.

83. Tulou et al., *supra* note 76, at 578.

the Netherlands.<sup>84</sup> In fact, “Atlantic and Gulf Coast shorelines are especially vulnerable to long term sea-level rise . . . the slope of these areas is so gentle that a small rise in sea level produces a large inland shift of the shoreline.”<sup>85</sup> Eighty-five coastal counties along the east coast contain approximately 1,600 square kilometers of land that lie less than a meter above current sea levels—placing roughly 4,800 kilometers of roads and roughly 388,000 people at risk.<sup>86</sup> By 2060, coastal erosion alone will have threatened nearly 87,000 homes along U.S. coasts.<sup>87</sup> A government study of the city of Boston, where sea levels could rise as much as a meter in the next one hundred years, determined that even the mildest predictions for sea-level rise and climate change might leave “Massachusetts General Hospital, the Public Garden, the Esplanade, and MIT in a pool of water after a strong storm surge in the harbor.”<sup>88</sup> Without appropriate adjustments to land-use planning and structural requirements, flood damage in Boston alone would be in the ballpark of \$57 billion over the next one hundred years, an amount \$26 billion more than would occur without climate change and sea-level rise impacts.<sup>89</sup>

These dangers are not limited, however, to the Gulf and Atlantic states. In California, a mere twelve-inch rise in sea level would shift flood events caused by 100-year-storm surges to once every *ten* years.<sup>90</sup> Storm modeling along the San Diego coast found that without sea-level rise there would be roughly ten extreme weather events between 2070–2100, but “[o]ver the same time period there would be approximately 330 extreme events with a rise in sea level of twenty centimeters, 2,300 extreme events with a rise of forty centimeters, and almost 19,000 events with a rise of eighty centimeters.”<sup>91</sup>

Sea levels rising at exponential rates (over geologic time scales) will meet head-on with a rush of humans heading at exponential rates right into the face of the disaster—an ironic scenario that

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84. *Id.*

85. EAGLE & CALDWELL, *supra* note 75, at 25.

86. *Id.*

87. Tulou et al., *supra* note 76, at 578–79.

88. Susan Milligan, *Study Predicts City Flood Threat Due to Warming*, BOS. GLOBE, Feb. 15, 2005, at A1, available at [http://www.boston.com/news/local/articles/2005/02/15/study\\_predicts\\_city\\_flood\\_threat\\_due\\_to\\_warming/](http://www.boston.com/news/local/articles/2005/02/15/study_predicts_city_flood_threat_due_to_warming/).

89. *Id.*

90. Tulou et al., *supra* note 76, at 578.

91. *Id.*

demonstrates the circular nature of human psychology related to disasters. Humans exacerbate climate change through carbon emissions, and as a result sea levels rise; then humans move in disproportionate numbers into areas likely to be inundated by rising sea levels; then society expects a system of disaster law and policy to alleviate their difficulties *after* disaster strikes. Over the last three decades, nearly half of all new construction in the United States has been in the coastal zone,<sup>92</sup> and approximately 53 percent of the total U.S. population lives on the 17 percent of land in the coastal zone.<sup>93</sup> By 2000, counties along the coast had more than four times the population density of counties further inland.<sup>94</sup> By 2020 an *additional* twenty-seven million people are expected to call the coast home.<sup>95</sup>

Ultimately, sea-level rise is a prime example of a slow-moving but perpetual disaster that has broad interjurisdictional and nationwide impacts, and one that synergizes with other disasters like hurricanes and flood events to wreak havoc on the human-built environment—especially in the absence of innovative and responsible land-use planning. In fact, perpetual disasters are arguably even more dangerous than transitory disasters, at least in the sense of failing to spur human action. The full magnitude of harm becomes apparent and observable only when temporally aggregated and spread out over periods of time that exceed any single generation's life span. As a result, it is difficult to forge collective action to avoid the disaster. As Professor Buzbee has noted, “[a] sudden disaster or perceived crisis is often essential to rouse the populace and give politicians reasons to take on issues of harms caused by industry and the process of real estate development.”<sup>96</sup> Yet perpetual disasters are by definition not “sudden,” thus masking the crisis. As discussed next,

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92. Barnhizer, *supra* note 18, at 308.

93. EAGLE & CALDWELL, *supra* note 75, at 25.

94. *Id.* at 33.

95. Barnhizer, *supra* note 18, at 311. Sea-level rise is not only a slow-moving disaster threatening humans and human-made capital; it also threatens important ecosystems already under strain. Eleven of the twenty-five most endangered ecosystems in the United States are coastal ecosystems. REED F. NOSS, EDWARD T. LAROE III. & J. MICHAEL SCOTT, *ENDANGERED ECOSYSTEMS OF THE UNITED STATES: A PRELIMINARY ASSESSMENT OF LOSS AND DEGRADATION* (1995), <http://biology.usgs.gov/pubs/ecosys.htm>.

96. William W. Buzbee, *Urban Sprawl, Federalism, and the Problem of Institutional Complexity*, 68 *FORDHAM L. REV.* 57, 129–130 (1999).

nonpoint pollution of vast watersheds like the Mississippi River Valley provides yet another example of a slow-moving disaster.

*2. Gulf/bay pollution and eutrophication from nonpoint runoff*

Nonpoint source water pollution from land-use-related agricultural activities “is now considered the nation’s most persistent and most difficult water quality problem.”<sup>97</sup> Over 1.9 million U.S. farms cover nearly half of all the land in the nation.<sup>98</sup> In 1998, agricultural runoff was a primary contributor to the degradation of 59 percent of river miles, 31 percent of impaired lake waters, and 15 percent of impaired estuarine waters.<sup>99</sup> Sedimentation, toxic chemicals such as Polychlorinated Biphenyls (PCBs), mercury, pesticides, hydrocarbons, and, of course, excess fertilizers and animal wastes containing nitrogen and phosphorus plague waters in these watersheds.<sup>100</sup> The interjurisdictional impacts are profound. Nonpoint runoff from agricultural, construction, forestry, and urban development activities sends sediment downstream that results in dredging costs of \$1 billion a year for harbors and reservoirs.<sup>101</sup> In addition to the Gulf dead zone highlighted in the introduction, nearly half of all estuaries in the United States contain hypoxic zones due to phosphorus and nitrogen pollution.<sup>102</sup> Nonpoint runoff aggregates at its final point of destination to destroy coral reefs and poison fisheries either directly or through the process of bioaccumulation.<sup>103</sup> There are further biological vector impacts, as runoff has resulted in the outbreak of microorganisms that attack and kill both fish and humans in the Chesapeake Bay, the Neuse River of North Carolina, and the Milwaukee, Wisconsin, watershed.<sup>104</sup>

Despite widespread interjurisdictional impacts and the nationwide concerns raised by nonpoint water pollution, the federal government does not regulate agricultural nonpoint source water

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97. Williams, *supra* note 9, at 22.

98. *Id.* at 44.

99. *Id.*

100. *Id.* at 46.

101. Robin Kundis Craig, *Local or National? The Increasing Federalization of Nonpoint Source Pollution Regulation*, 15 J. ENVTL. L. & LITIG. 179, 213 (2000).

102. *Id.*

103. See RASBAND ET AL., *supra* note 58, at 456.

104. Craig, *supra* note 101, at 214.

pollution under the Clean Water Act (CWA). Again, this hesitancy is due in part to conceptions of exclusive state and local authority over land uses,<sup>105</sup> leaving states as the “exclusive regulators of nonpoint source pollution.”<sup>106</sup> States, meanwhile, are doing very little to exercise their regulatory authority.<sup>107</sup> As Professor Craig has noted, “[s]o long as Congress operates within constitutional federalism requirements, its statutory judgment calls are subject to revision if new information or awareness indicates that the initial statutory division of power incorrectly reflects the true balance of the national and local interests at stake.”<sup>108</sup> The CWA’s point source/nonpoint source distinction constitutes one such potential misjudgment, as the interstate commercial impacts of nonpoint water pollution are becoming ever clearer, thus rendering a point source/nonpoint source distinction increasingly inconsequential under Commerce Clause analysis.

Though the CWA does contain nonprescriptive provisions that might be harnessed to address or encourage greater control over nonpoint pollution,<sup>109</sup> neither the CWA nor other programs have “translated into either widespread demonstrable results or clearly defined, coherent regulatory programs,” leading to calls for an increased federal presence in the form of minimum federal standards with a great degree of flexibility available to the states in implementation.<sup>110</sup> Such standards would address the problem of state-level inaction as well as foster more efficient coordination considering the large-scale interjurisdictional impacts along watersheds like the Mississippi and the Gulf of Mexico.<sup>111</sup> To the extent that such standards might involve greater federal inputs into state land-use planning within potentially affected watersheds, it is necessary to consider a reconstitution of federalism principles.

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105. See Williams, *supra* note 9, at 27 (“The practices that contribute most to nonpoint source pollution are patterns of land use, the control of which has been guarded jealously by local government authorities, making direct federal control at best a touchy political proposition. Current federal programs to control nonpoint source pollution are the product of judgments that controls of this sort should remain with state and local authorities, as has been the traditional practice.” (footnote omitted)).

106. See Craig, *supra* note 101, at 179.

107. Williams, *supra* note 9, at 23.

108. Craig, *supra* note 101, at 181.

109. See Williams, *supra* note 9, at 67–91.

110. *Id.* at 25–29.

111. *Id.*



### 3. *Invasive species*

At first blush, invasive species may not seem like a perpetual disaster. Yet, the persistent rates at which invasive species spread and their wide-scale interjurisdictional economic and other impacts justify this categorization under many circumstances. Estimates in the year 2000 were that the United States suffers \$137 *billion* a year in agricultural losses, infrastructure damage, management, and other costs associated with invasive species.<sup>112</sup> The estimated cost of managing just one invasive species, zebra mussels, in the Great Lakes between 2000 and 2010 was nearly \$5 billion.<sup>113</sup> Invasive species also exacerbate other categories and types of disaster, such as transitory fires. For example, Tucson, Arizona, has experienced increased invasion from nonnative vegetation that has “transform[ed] fire-resistant desert into highly flammable grassland.”<sup>114</sup>

Invasive species not only wreak havoc on human development activities, but also give rise to a variety of natural capital costs. Up to 46 percent of plants and animals listed on the Endangered Species Act have been negatively impacted by invasives.<sup>115</sup> Furthermore, invasive species’ interjurisdictional scope is profound. Invasive plants alone infest 100 million acres in the United States, and each year they spread an additional 3 million acres.<sup>116</sup>

President Clinton issued an executive order in 1999 establishing a National Invasive Species Council.<sup>117</sup> In 2000, the regulatory agencies that make up the council spent approximately \$632 million to combat invasive species.<sup>118</sup> Though the federal and state governments and international forums have set their sights on invasive species through a variety of legislative and other programs

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112. NAT’L INVASIVE SPECIES COUNCIL, MEETING THE INVASIVE SPECIES CHALLENGE 8 (2001), *available at* <http://www.invasivespeciesinfo.gov/docs/council/mpfinal.pdf>; Flynn Boonstra, Note, *Leading by Example: A Comparison of New Zealand's and the United States' Invasive Species Policies*, 43 CONN. L. REV. 1185, 1188 (2011). A single species of termite costs the city of New Orleans \$300 million annually. NAT’L INVASIVE SPECIES COUNCIL, *supra*, at 2.

113. Jason A. Boothe, Comment, *Defending the Homeland: A Call to Action in the War Against Aquatic Invasive Species*, 21 TUL. ENVTL. L.J. 407, 412 (2008).

114. FARBER ET AL., *supra* note 1, at 6–7.

115. NAT’L INVASIVE SPECIES COUNCIL, *supra* note 112, at 2.

116. *Id.* at 11.

117. Exec. Order No. 13,112, 64 Fed. Reg. 6183, 6184 (1999).

118. NAT’L INVASIVE SPECIES COUNCIL, *supra* note 112, at 18.

dating at least as far back as the Lacey Act of 1900,<sup>119</sup> problems persist and appear to be getting worse.<sup>120</sup>

Some invasive species implicate land-use planning that currently falls within the exclusive regulatory ambit of state and local governments, like the crafting of private forest management standards.<sup>121</sup> Exclusive state regulatory control over such standards gives further cause for concern, as most states have been unable to formulate robust approaches to managing the entire suite of invasive species that pose threats to the country.<sup>122</sup> This indicates that greater federal inputs may be needed to address the problems associated with widespread and extremely destructive invasive species.

An example of such a species is cogongrass, which has gripped the southeastern United States. Cogongrass is “an aggressive invader of natural and disturbed areas throughout the Southeast. It disrupts ecosystem functions, reduces wildlife habitat, decreases tree seedling growth and establishment success, and alters fire regimes and intensity.”<sup>123</sup> Scientists have noted that the grass has placed the southeastern United States in a “crisis.”<sup>124</sup> Over one million acres of the state of Florida is plagued by cogongrass, with tens of thousands more acres present in each of six other states. The grass spreads at a rate of thousands of additional acres each year.<sup>125</sup> Most of the Eastern United States and even the Pacific Northwest states are considered vulnerable to its spread. Scientists have argued that “[t]he invasion of cogongrass appears facilitated by dynamics in this era of rapid global warming, increased air pollution with higher carbon dioxide levels, human encroachment with wildland fragmentation, and solidifying urbanization with a population indifferent to the land base that supports them. These conditions favor cogongrass

119. 16 U.S.C. §§ 3371–3378 (2006); *see also* National Invasive Species Act, 16 U.S.C.A. §§ 4701–4715 (West 2010) (this act, however, is very limited in scope); 3 ENVIRONMENTAL LAW INSTITUTE, LAW OF ENVIRONMENTAL PROTECTION § 21:7 (2011).

120. NAT’L INVASIVE SPECIES COUNCIL, *supra* note 112, at 10–12.

121. *See infra* note 134 and accompanying text.

122. *See* Boonstra, *supra* note 112, at 1200–07.

123. C.W. EVANS ET AL., U.S. FOREST SERV., FIELD GUIDE TO THE IDENTIFICATION OF COGONGRASS: WITH COMPARISON TO OTHER COMMONLY FOUND GRASS SPECIES IN THE SOUTHEAST (2006), *available at* <http://www.cogongrass.org/cogongrassid.pdf>.

124. James H. Miller, *The Context of the South’s Cogongrass Crisis*, in PROCEEDINGS OF THE REGIONAL COGONGRASS CONFERENCE: A COGONGRASS MANAGEMENT GUIDE 6, 6 (Nancy J. Loewenstein & James H. Miller eds., 2007) [hereinafter COGONGRASS CONFERENCE].

125. *Id.*

invasions.”<sup>126</sup> Scholars have called for invasive species management plans to be formulated in every state to prevent spread of the grass,<sup>127</sup> especially considering that “[t]he invasion of cogongrass into the Southern United States has replaced the forest fire as the greatest perceived threat to biodiversity, land use[] practices and land values.”<sup>128</sup>

Cogongrass is spread through many vectors, including contaminated forestry equipment used for site preparation, tree planting and extraction, and other forest management activities.<sup>129</sup> The impacts on private forestry can be profound. Controlled burn activities are important to forest health, not only to prevent more catastrophic fires, but also to maintain the overall health of the forest. Cogongrass, however, burns so hot that not only does it increase the risk of fire disasters for surrounding communities, but it can actually kill trees present on burned sites.<sup>130</sup> Scholars have noted that “[c]ogongrass fires are very intense and hot, with little above ground vegetation able to survive. . . . Fires from cogongrass are typically 15 to 20% hotter and more intense than natural fires in pine-based ecosystems in the Southern U.S.”<sup>131</sup> In addition, once the grass takes hold, species biodiversity in the ecosystem drops to extremely low levels.<sup>132</sup>

These impacts on private forest management activities in the South are potentially devastating. Eighty-six percent of southeastern forests are privately owned,<sup>133</sup> and “[u]nder the U.S. Constitution, the federal government has limited authority and responsibility; all other powers are reserved for the states. [Private] [f]orestland management and use was one such reserved power.”<sup>134</sup> While state

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126. *Id.*

127. *Id.* at 8.

128. Lee Atkins, *Operational Considerations for Control of Cogongrass*, in COGONGRASS CONFERENCE, *supra* note 124, at 38, 38.

129. David J. Moorhead & Charles T. Barger, *Cogongrass Distribution and Spread Prevention*, in COGONGRASS CONFERENCE, *supra* note 124, at 24, 25.

130. See Gregory E. MacDonald, *Cogongrass (Imperata cylindrical): Biology, Distribution and Impacts in the Southeastern U.S.*, in COGONGRASS CONFERENCE, *supra* note 124, at 10, 12.

131. *Id.*

132. See Miller, *supra* note 124, at 7.

133. DAVID N. WEAR & JOHN G. GREIS, U.S. FOREST SERV., THE SOUTHERN FOREST FUTURES PROJECT: SUMMARY REPORT 58 (May 12, 2011), [http://www.srs.fs.usda.gov/futures/reports/draft/summary\\_report.pdf](http://www.srs.fs.usda.gov/futures/reports/draft/summary_report.pdf).

134. Gerald A. Rose et al., *Forest Resources Decision-Making in the US*, in THE POLITICS

and local governments maintain constitutional authority to regulate private forest management, in the southeastern United States especially, states maintain some of the most lax regulatory standards in the world.<sup>135</sup> Cogongrass's threat to southern forestry is of critical importance as the timber production sector in the South contributed more than one million jobs and \$51 billion in employee compensation in 2009.<sup>136</sup> Indeed, southern forests are the most intensively managed forests in the United States,<sup>137</sup> and a majority of U.S. lumber is harvested from southern forests.<sup>138</sup> Remarkably, "since 1986, if the South were compared with any other country, none would produce more timber than this one region of the United States."<sup>139</sup> As a result of the perpetual spread of an invasive species like cogongrass across the southeastern United States, having profound interjurisdictional economic and environmental impact, greater coordination provided by federal minimum standards may be warranted to stave off a worsening disaster—even if such standards intrude into traditional areas of state and local constitutional regulatory authority.

*C. Variables in the "Gray Area" of the Spectrum: Disaster Frequency and Durational Impact*

A variety of disasters exist in the gray area of the transitory-perpetual spectrum. These disasters do not neatly fall into one category or the other because their frequency or durational impact or both may cause them to take on the characteristics of both transitory and perpetual disasters. Given their potential to take on the characteristics of perpetual disasters, however, disasters in this area may not only warrant greater federal inputs into land-use policy, but if those inputs take the "top-down" form of federal minimum standards, they may also be more constitutionally viable than they would be for transitory disasters.

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OF DECENTRALIZATION: FORESTS, POWER AND PEOPLE 238, 239 (Carol J. Pierce Colfer & Doris Capistrano eds., 2005). *See also* JAN G. LAITOS ET AL., NATURAL RESOURCES LAW 849 (2006).

135. McDERMOTT ET AL., *supra* note 59.

136. WEAR & GREIS, *supra* note 133, at 17.

137. *Id.* at 29.

138. *Id.* at 5.

139. *Id.* at 17.

*1. Frequency—gulf hurricanes and Mississippi River Valley flooding*

Some disasters may technically be transitory, in that there is a temporal break between disaster events, but they can occur so frequently as to mimic the continual and wide-scale effects of perpetual disasters. Frequency can be so great over a period of time that these disasters warrant greater national interest relative to the localities in which destruction occurs. A couple of examples are illustrative—Gulf hurricanes and flooding of the Mississippi River Valley. In fact, the land-use planning issues implicated by these types of disaster are quite related. Research has demonstrated that “[i]n the United States, development in our Midwestern river valleys and our Gulf Coast is removing the Gulf Coast wetlands at a rate of two football fields every hour, bringing storms and the ocean ever closer”<sup>140</sup>—a state of affairs which exacerbates the destruction caused by both hurricanes and flooding.

Gulf hurricanes primarily implicate land-use planning by creating other disasters, such as severe flood events. When residential and commercial developments are located in flood-prone areas, hurricane related costs, both economic and human, are greater. The recurrence of hurricanes in the Gulf over decades, where every few years a state of emergency is declared in one or more states, indicates that transboundary and even nationwide harms are occurring on wide scales. The aggregated state and local land-use planning related to flood zones becomes of much greater national-level concern during hurricane events. Hurricane Katrina demonstrated that low-lying coastal lands, for instance, “are already vulnerable to erosion, flooding, storm surges, and tsunamis; and poor development planning has placed trillions of dollars worth of building and infrastructure directly in the path of these threats.”<sup>141</sup>

It is not only land-use planning that places urban development in floodplains, however, which exacerbates the damage caused by hurricanes. The state of Louisiana is losing 6600 acres of coastal wetlands per year—wetlands that are a natural hurricane disaster mitigation resource.<sup>142</sup> Though some of this loss is naturally

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140. CHARLES PERROW, *THE NEXT CATASTROPHE: REDUCING OUR VULNERABILITIES TO NATURAL, INDUSTRIAL, AND TERRORIST DISASTERS* 39 (2007).

141. Tulou et al., *supra* note 76, at 578.

142. ROBERT VERCHICK, *FACING CATASTROPHE: ENVIRONMENTAL ACTION FOR A POST-KATRINA WORLD* 19 (2010).

occurring, “the real culprits are human-made” and include not only commercial and residential development of floodplains, but also levees, navigational channels, and oil-and-gas infrastructure that have “accelerate[d] coastal land loss by reducing the natural flow of the [Mississippi] [R]iver’s freshwater and sediment to wetland areas, where the lost land would then naturally be replenished.”<sup>143</sup> Instead of maintaining wetlands, that sediment travels down the Mississippi and out into the Gulf as far as the outer continental shelf where it cannot naturally form important barrier islands.<sup>144</sup> These wetlands could have prevented much of Katrina’s damage in New Orleans by acting as a sponge for the storm surge. Other hurricane-prone states face similarly staggering numbers of wetland loss. Over the last fifteen years, Florida has lost 84,000 acres of wetlands to urban development, or “subdivisions and strip malls”—a rate of 5600 acres a year.<sup>145</sup> Yet, even after the destruction wrought by Katrina, Florida is the only Gulf Coast state to implement comprehensive planning that requires local disaster mitigation plans.<sup>146</sup>

Despite the land-use-driven destruction of wetlands, both the state and federal governments have failed to formulate a plan for changing the status quo. After New Orleans experienced the near miss of Hurricane Georges in 1998, a \$14 billion wetlands restoration plan was drawn up, but Congress and the Bush administration balked at the proposal.<sup>147</sup> After another near miss from Hurricane Ivan and another balk on the project by Congress, a member of the Louisiana governor’s office queried, “What is it going to take for Congress and the president to realize this is not just another project? Would we have had to get hit by the big one? Who wants to wait for that? Surely it shouldn’t have to take loss of life, does it?”<sup>148</sup> The next year, Hurricane Katrina killed at least 1800 people and cost over \$81 billion in damages.<sup>149</sup> While wetlands

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143. *Id.*

144. *Id.*

145. Matthew Waite & Craig Pittman, *Louisiana Wetlands Serve as Warning, Experts Say*, ST. PETERSBURG TIMES, Sept. 6, 2005, at A10, available at [http://www.sptimes.com/2005/09/05/Worldandnation/Katrina\\_offers\\_lesson.shtml](http://www.sptimes.com/2005/09/05/Worldandnation/Katrina_offers_lesson.shtml).

146. Berke & Campanella, *supra* note 49, at 201.

147. Waite & Pittman, *supra* note 145.

148. *Id.*

149. RICHARD D. KNABB ET AL., NOAA, TROPICAL CYCLONE REPORT: HURRICANE KATRINA, 23–30 AUGUST 2005 at 11, 12 (last updated Sept. 14, 2011), [http://www.nhc.noaa.gov/pdf/TCR-AL122005\\_Katrina.pdf](http://www.nhc.noaa.gov/pdf/TCR-AL122005_Katrina.pdf).

restoration and smarter development planning would not have alleviated all of those deaths or economic costs, the \$14 billion cost of the wetlands restoration seems like a bargain compared to the \$81 billion in damages wrought by Katrina.

Ultimately, hurricanes occur with such frequency, over such broad scales, and with such significant national impact that even though they are temporal, their recurrence justifies greater federal inputs into mitigatory land-use planning. This is especially the case considering that hurricanes are expected to become both more frequent and more intense as climate change contributes to warmer oceans.<sup>150</sup>

Flooding along vast watersheds like the Mississippi River Valley also occurs with both frequency and large scale interjurisdictional effects. The Mississippi River floods of 1993 were the result of a cold winter followed by a wet spring, leaving nine states inundated—North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, and Illinois.<sup>151</sup> In total, fifty people died, \$15 billion of damage occurred, a full seventy-five towns were “completely under floodwaters,” and ten thousand homes were destroyed.<sup>152</sup>

Rather than seek regulatory or other inputs into state and local land-use planning in the region, the federal government spent \$1 billion in a “voluntary buyout program designed to return floodplains to their natural state, while some states did heighten land-use standards restricting floodplain development.”<sup>153</sup> As discussed in Part II.A.1 above, however, Missouri was not one of those states. Indeed, as of 2003, only nine states nationwide maintained regulations prohibiting construction of certain “critical facilities,” such as hospitals, water treatment plants, and emergency centers, within floodplains.<sup>154</sup>

As scholars have noted, attacking the primary driver of Mississippi watershed flooding is a particularly difficult task because policymakers “are faced with a land-use planning system that is so

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150. Tulou et al., *supra* note 76, at 578. More frequent and intense Category 4 and 5 storms have occurred over the past thirty years, a trend “directly linked to increases in sea-surface temperatures.” *Id.*

151. PERROW, *supra* note 140, at 18.

152. *Id.*

153. FARBER ET AL., *supra* note 1, at 34.

154. *Id.* at 36.

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fragmented that concerted, coordinated actions between various actors across all levels of government are severely hindered.”<sup>155</sup> Regional watershed managers during the Missouri floods dealt with “no fewer than 6 separate federal agencies, 23 state agencies spread across 5 states, and over 233 municipalities.”<sup>156</sup> The inability of fragmented jurisdictions to coordinate mitigation efforts against a single, highly devastating, but relatively frequent event like a Mississippi Valley flood demonstrates a need for greater federal inputs into land-use planning along watersheds in the valley.

*2. Durational Impact—nuclear plant incident and the “Big One” earthquake*

Some disasters may only occur once, or *far* less frequently than do “pure” transitory disasters, but the long-term, interjurisdictional, nationwide durational impact is of a tremendous magnitude. A major earthquake or a nuclear facility incident would be examples. These disasters operate for a conceptually severed period of time just like perpetual disasters, primarily due to the long-lasting, continual nature of their after-effects.

The recent East Coast earthquake, with an epicenter in Richmond, Virginia, could be felt along a stretch from Georgia to Maine.<sup>157</sup> The damage could have been far worse. Yet, perhaps symbolic of both the infrequency of eastern earthquakes as well as the fragility of national interests during times of disaster, the Washington Monument was closed indefinitely until repairs could be made to the structural damage caused by the quake.<sup>158</sup>

As Farber et al. note, in 2001 the Federal Emergency Management Agency (FEMA) identified the three most likely catastrophes to hit the United States: a major earthquake along the San Andreas fault, a terrorist attack on New York City, and a major hurricane hitting New Orleans—the latter two have already occurred, of course.<sup>159</sup> Though predictions are difficult, the “big

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155. Damien Leonard, Comment, *Raising the Levee: Dutch Land Use Law as a Model for U.S. Adaptation to Climate Change*, 21 GEO. INT’L ENVTL. L. REV. 543, 555 (2009).

156. *Id.*

157. Katharine Q. Seelye, *Above All Else, Eastern Quake Rattles Nerves*, N.Y. TIMES, Aug. 24, 2011, at A1, available at <http://www.nytimes.com/2011/08/24/us/24quake.html?pagewanted=all>.

158. *Id.*

159. FARBER ET AL., *supra* note 1, at 39.



one” is expected within decades<sup>160</sup> and there is a “greater than 99 percent chance that a 6.7-magnitude earthquake will strike one of California’s many major faults in the next thirty years.”<sup>161</sup> A quake the size of the 1906 San Francisco earthquake could kill between 800 and 3400 people, seriously injure between 4000 and 12,500 people, leave 400,000 to 600,000 people homeless, and result in economic losses of between \$93 billion and \$120 billion.<sup>162</sup> Land-use decisions made by the municipal government just after the 1906 San Francisco earthquake actually made potential destruction from a future quake far more severe.<sup>163</sup> To remedy this problem, the state of California passed legislation in the 1970s to prevent the building of residential structures along faults and to authorize local governments to implement stricter zoning standards. Many local governments have acted upon that authority.<sup>164</sup>

Charles Perrow argues that a primary reason for the city of Los Angeles’ “vulnerability” to a major earthquake is the fact that the Community Redevelopment Authority, appointed by the mayor, is “largely composed of businessmen, and able to designate development areas . . .” and includes members of the chemical industry.<sup>165</sup> As a result, the area maintains the second-highest concentration of chemical facilities in the United States, many located along earthquake faults.<sup>166</sup> Perrow asserts,

Why they were built there in the first place and allowed to expand, since the hazards were known and risky areas identified many decades ago, is an important question. The answer appears to be economic pressures on the political representatives responsible for overseeing decisions about site selection, protection, and the enforcement of regulations. Market forces are allowed to control growth, but there seems to be a market *failure* for preventing or mitigating low-probability/high-consequence accidents.<sup>167</sup>

Now certainly earthquakes may be localized in nature and more appropriately categorized as transitory in some circumstances. Yet, as

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160. PERROW, *supra* note 140, at 33.

161. FARBER ET AL., *supra* note 1, at 39.

162. *Id.*

163. *Id.* at 40.

164. *Id.* at 40–41.

165. PERROW, *supra* note 140, at 34.

166. *Id.*

167. *Id.* at 35.

with recurring hurricanes in the Gulf, the occurrence of a catastrophic earthquake on the San Andreas Fault is only a matter of time and the nationwide impacts would be profound. Perhaps under such circumstances the federal government should have an increased role in land-use planning in the region as a means of mitigating that eventuality and also reducing its own inevitable expenditures associated with disaster relief.

The recent East Coast earthquake actually highlighted one of the threats posed by land-use planning associated with the siting of nuclear power plants. Though the North Anna station accrued no structural damage, just northwest of Richmond, Virginia, the reactor was temporarily shut down.<sup>168</sup> Twelve other plants “felt” the quake but did not shut down.<sup>169</sup> Concerns that a Fukushima-like disaster could occur were immediately raised.<sup>170</sup> The Fukushima nuclear plant in Japan was crippled by this year’s devastating tsunami, itself triggered by an earthquake, and the meltdown of reactors released radiation, traces of which traveled all the way to the United States.<sup>171</sup> The damage could take years to clean up.<sup>172</sup>

Earthquakes are not the only disaster that could give rise to a nuclear disaster. Hurricanes also pose a threat to nuclear facilities. Recently, Hurricane Irene slogged along a path that threatened more than a dozen nuclear plants along the East Coast.<sup>173</sup> None of them lost power to their reactors, though two reactors were taken offline because of the storm—a New Jersey nuclear plant for precautionary reasons and a Maryland plant after debris generated by the hurricane

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168. Rebecca Smith, *Earthquake Triggers Reactor-Design Review*, WALL ST. J., Aug. 27, 2011, at A3, available at <http://tinyurl.com/897u7jx> (subscription required).

169. Matthew L. Wald, *13 Plants Felt Earthquake, But Reactors Were Spared*, N.Y. TIMES, Aug. 26, 2011, at A16, available at [http://www.nytimes.com/2011/08/26/science/earth/26nuclear.html?\\_r=1&ref=earth](http://www.nytimes.com/2011/08/26/science/earth/26nuclear.html?_r=1&ref=earth).

170. Tom Hamburger & Melanie Mason, *East Coast’s Quake Rekindles Debate on Nuclear Plant Safety*, L.A. TIMES, Aug. 28, 2011, at A20, available at <http://tinyurl.com/3awu9hu>.

171. CNN Wire Staff, *Japan’s Nuclear Contamination Spreads to More U.S. States*, CNN HEALTH (Mar. 29, 2011, 5:46 AM), <http://www.cnn.com/2011/HEALTH/03/28/radiation.us/index.html>.

172. John M. Glionna, *Japan Says Nuclear Plant Has Stabilized*, L.A. TIMES, July 21, 2011, at A3, available at <http://www.latimes.com/news/nationworld/world/la-fg-japan-fukushima-20110721,0,730227.story>.

173. Julie Johnsson, *U.S. Nuclear Reactors Weather Irene Without Losing Power; One Goes Offline*, BLOOMBERG (Aug. 28, 2011, 4:23 PM), <http://www.bloomberg.com/news/2011-08-28/u-s-nuclear-reactors-weather-hurricane-irene-safely-without-losing-power.html>.

damaged the plant and triggered an automatic shutdown.<sup>174</sup> At the Maryland plant, Irene hurled a piece of aluminum siding into the primary transformer on the site.<sup>175</sup>

As these examples illustrate, the placement of a nuclear facility is of critical importance in order to mitigate risk if a nuclear incident occurs, especially in earthquake- and hurricane-prone zones. New nuclear facilities are not sited with anything approaching regularity. In addition, because the federal government generally maintains preemptive regulatory control over nuclear energy in the United States, the federal government already has a say in land-use planning related to such facilities since the federal government may simply refuse to permit a facility in the first instance.<sup>176</sup> The federal government, however, would be wise to wield this authority responsibly in order to mitigate and prevent both the risk of and ensuing damage from a nuclear incident.

*D. Implications of the Transitory-Perpetual Disaster Spectrum  
Categorization*

The above categorizations are not meant to be exact or mutually exclusive. Rather, the categories are merely meant to begin a more holistic discussion of land-use-related disaster mitigation and prevention, and to provide a framework within which to analyze both which types of disaster require greater federal inputs as well as how those inputs might best be achieved, including consideration of the constitutionality of alternatives. Ultimately, land-use policies related to perpetual and “gray area” disasters like sea-level rise, nonpoint runoff, certain invasive species, Mississippi River Valley flooding, Gulf hurricanes, nuclear incidents, and the “big one” earthquake need greater federal inputs to forge effective disaster mitigation and prevention. Even though bilateral and horizontal mechanisms should certainly be utilized to supplement any top-down mechanism, some form of top-down regulatory inputs may be needed due to the national interests at stake, the significant inter-jurisdictional effects, and the costs the federal government would otherwise incur in *post-disaster* relief. As demonstrated in Figure 1, as

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174. *Id.*

175. *Id.*

176. James L. Buchwalter, Annotation, *Preemption Issues Under Atomic Energy Act of 1954*, §§ 1 *et seq.*, 42 U.S.C.A. §§ 2011 *et seq.*, 198 A.L.R. FED. 147, at § 6[a] (2004).

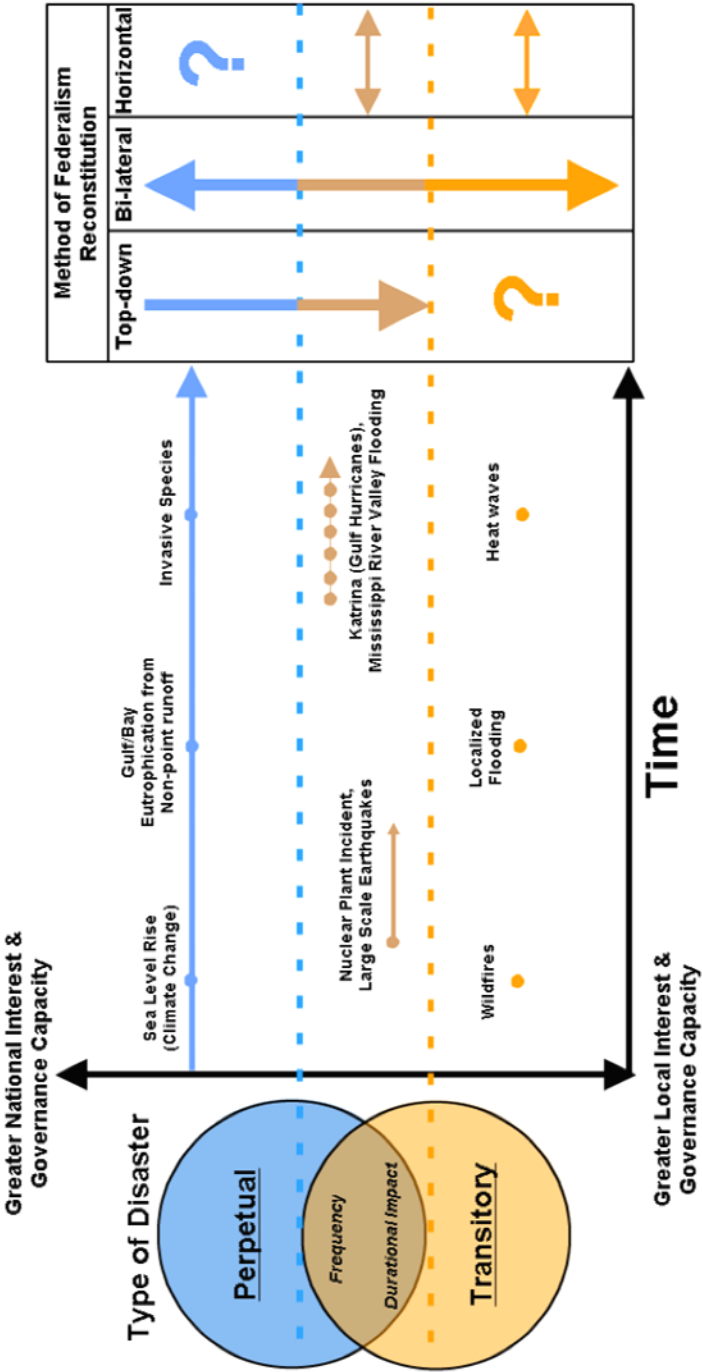
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well as in the next Part, these top-down inputs might also be more constitutionally viable than they would be for “pure” transitory disasters like wildfires, localized flooding, and heat waves—disasters for which they would also be less necessary. Those types of pure transitory disasters are perhaps best addressed through bilateral or horizontal means in order to avoid any constitutional federalism complications.

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Figure 1:



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### III. MECHANISMS OF RECONSTITUTING FEDERALISM WITHIN THE BIMODAL FEDERALISM FRAMEWORK

*Over the long term, the most straightforward and cost-effective strategy to minimize or prevent damages and losses from natural hazards is to guide development away from hazard-prone areas.*<sup>177</sup>

It seems that state and local governments are doing little in the way of guiding development out of disaster-prone areas, and indeed are actively promoting that development. The federal government is also incentivizing development of disaster-prone areas through disaster relief, the tax code, housing and small business grants and loans, insurance schemes, and a variety of other policies aimed at promoting economic growth at the expense of long-term human, economic, and environmental welfare. Thus, both national and subnational governments must adjust policy decisions that exacerbate the costs of disaster events.<sup>178</sup> Aside from those policy choices, however, what about the institutions that facilitate these decisions? What about constitutional federalism? What if the federal government needs to maintain greater inputs into subnational land-use planning related to disaster mitigation and prevention, and garners the political will to do so, but is constitutionally constrained

177. Anna K. Schwab & David J. Brower, *Increasing Resilience to Natural Hazards: Obstacles and Opportunities for Local Governments Under the Disaster Mitigation Act of 2000*, in *LOSING GROUND: A NATION ON EDGE* 287 (John R. Nolon & Daniel B. Rodriguez eds., 2007) (citation omitted).

178. Indeed, political will is an “important obstacle” to local adoption of stricter land-use controls because

[f]ew local governments are willing to reduce natural hazards by managing development. It is not so much that they oppose land-use measures (although some do), but rather that, like individuals, they tend to view natural hazards as a minor problem that can take a back seat to more pressing local concerns . . . . Also, the costs of mitigation are immediate while the benefits are uncertain, do not occur during the tenure of current elected officials, and are not visible . . . . In addition, property rights lobbies are growing stronger. All of these factors contribute to a lack of political leadership for limiting land use in hazardous areas.

DENNIS S. MILETI, *DISASTERS BY DESIGN: A REASSESSMENT OF NATURAL HAZARDS IN THE UNITED STATES* 160 (1999). What Professor Mileti is describing is a tragedy of the commons whereby state governments take on the characteristics of “rational herders” appropriating depletable resources (the land base, the services provided by the natural capital replaced by human-made capital, etc.), where in the absence of state or federal requirements it is exceedingly difficult to exclude any one local government from appropriating such resources. See Hudson, *supra* note 17.

in those efforts?<sup>179</sup> This Part deals with these questions—detailing how the federal government may gain greater inputs into land-use planning related to certain disasters and how those inputs might best be achieved. To be clear, as detailed below, this is not to say that the federal government will displace state and local authority to act.<sup>180</sup> Rather, this section explores the best mechanisms for the federal government to act as a “fail-safe”<sup>181</sup> in the event that state and local governments do not act. As Professor Buzbee described,

The historical division of authority among federal, state, and local governments is not a historical accident, but has largely arisen as a result of the relative institutional competence of each level of government in addressing particular social needs. The optimal mix of federal, state, and local regulatory roles, however, inevitably changes over time as technological, environmental, market, and political changes occur.<sup>182</sup>

This Part analyzes the best mechanisms to utilize for striking this optimal mix from the perspective of both yielding results and considering questions of constitutionality. Furthermore, these mechanisms are discussed in the context of a new theory of “Bimodal Federalism,” which acknowledges within the same

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179. Some commentators have recently argued for a greater federal presence as a general matter:

We need a more centralized regulatory system. Local initiative is simply not reliable in the case of mitigation. Localities are reluctant to enforce state standards, national standards are few, and enforcement is lax. This is an area where centralized regulation—standards and enforcement—is needed; given the political influence of growth-oriented city officials and property and building interests, there is bound to be a “failure” of the private market.

PERROW, *supra* note 140, at 37.

180. Professor Buzbee has argued that

[t]he limited federal role in encouraging or prohibiting particular urban forms or types of land use is the result of historical traditions and constitutionally limited grants of authority to the federal government. Virtually all scholarly examinations of sprawl and suburbanization trends point out, however, that federal laws and regulations have already influenced metropolitan growth patterns. Thus, an increased federal role seeking to address or to deter sprawl or its ills would constitute a change in federal policy, but would not constitute a wholly new entry into fields of law and regulation influencing urban form. Recent decisions by the United States Supreme Court make less likely any substantial expansion of federal authority to displace state and local land-use decisionmaking.

Buzbee, *supra* note 96, at 98.

181. See Blake Hudson, *Fail-Safe Federalism and Climate Change: The Case of U.S. and Canadian Forest Policy*, 44 CONN. L. REV. (forthcoming 2012).

182. Buzbee, *supra* note 96, at 94.

framework the seemingly irreconcilable conceptions of federalism as defined by dynamic and dualistic theories of federalism.

*A. The Bimodal Federalism Framework: Integrating Dynamic Federalism with Remnants of Dual Federalism*

A significant tension exists in scholarly debates over the constitutional workings of U.S. federalism, particularly in the environmental and land-use context. As explained below, this tension centers around normative, interpretive, and descriptive analyses of two different modes of federalism in operation in the United States today—“dynamic federalism” and “dual federalism”—as well as an apparent presumption that either one *or* the other is the correct theoretical descriptor of U.S. federalism. Theories of dual federalism posit that “the states and the federal government inhabit[] mutually exclusive spheres of power,”<sup>183</sup> while dynamic federalism “rejects any conception of federalism that separates federal and state authority under the dualist notion that the states need a sphere of authority protected from the influence of the federal government” and posits that “federal and state governments function as alternative centers of power and *any matter* is presumptively within the authority of both the federal and the state governments.”<sup>184</sup> Both dynamic and dual federalism involve normative, interpretive, and descriptive claims about not only the proper operation of U.S. federalism, but also about how U.S. federalism operates in fact.

Yet, neither of these theories in isolation provides an accurate descriptive picture of the actual operation of U.S. federalism today. Based upon these definitions, it is true that dynamic federalism may be a more accurate interpretation of how many, if not most, federal-state regulatory interactions occur—especially in the modern regulatory state. We may even be witnessing a transition from dual operations of federalism to dynamic ones regarding a wide array of subject matters. In the environmental and land-use context, dynamic federalism may also be the more appropriate normative theory of federalism to achieve successful legal and policy results on the ground. Yet, regarding certain regulatory subjects, remnants of dual federalism remain, and these remnants also form an integral part of

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183. Kirsten H. Engel, *Harnessing the Benefits of Dynamic Federalism in Environmental Law*, 56 EMORY L.J. 159, 175 (2006).

184. *Id.* at 176 (emphasis added).



the current scope of U.S. constitutional federalism.<sup>185</sup> An example is direct land-use regulation, where strong notions that “states need a sphere of authority protected from the influence of the federal government” do in fact remain, regardless of normative claims that states do not need a separate sphere.<sup>186</sup> These remnants of dual federalism should not be ignored in analysis and application of modern federalism theory or in proposed solutions to federalism conflicts. The following discussion demonstrates how the full scope of U.S. federalism theory may be thought of as increasingly integrating principles of dynamic federalism in combination with as-of-yet unresolved principles of dual federalism. This integrated view of federalism is a theory of “Bimodal Federalism” that seeks to recognize federalism as it in fact operates in the context of present day constitutional scholarly debates and jurisprudence. The word “bimodal” simply means “having or providing two modes, methods, [or] systems.”<sup>187</sup> Thus, bimodal federalism analysis takes federalism at face value today and includes application of federalism principles that might fall under either the dynamic or the dual mode of federalism.

Dynamic federalism theory questions the previously held federalism assumptions that “regulatory authority to address environmental ills should be allocated to one or the other level of government with minimal overlap.”<sup>188</sup> Professor Engel has argued that

a static allocation of authority between the state and federal government is inconsistent with the process of policymaking in our federal system, in which multiple levels of government interact in the regulatory process. Absent constitutional changes that would

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185. As Professor Schapiro has noted, “the basic conception of federalism continues to be a system of independent national and state governments that must be protected from each other,” and “[d]ualist conceptions survive” in some areas. Robert A. Schapiro, *Toward a Theory of Interactive Federalism*, 91 IOWA L. REV. 243, 246 (2005). Even so, this Article does not seek to make normative claims about how dynamic U.S. federalism should be from a constitutional perspective or to argue that there are or are not separate dualist spheres of governance. Rather, the Article simply recognizes that the debate is being waged and as a result legislative and policy responses should be sensitive to the current constitutional reality—a reality that jurisprudentially may very well result in continued judicial carve-outs of separate spheres of governance for the federal or state governments.

186. Engel, *supra* note 183, at 176.

187. *Bimodal Definition*, DICTIONARY.COM, <http://dictionary.reference.com/browse/bimodal> (last visited Oct. 14, 2011).

188. Engel, *supra* note 183, at 161.

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lock in a specific allocation of authority, broad, overlapping authority between levels of government may be essential to prompting regulatory activity at the preferred level of government.<sup>189</sup>

Dynamic federalism recognizes the importance of non-static allocations of regulatory authority in federal systems and “conceives the states and the federal government as alternative—not mutually exclusive—sources of regulatory authority.”<sup>190</sup> The practical application of dynamic federalism is in crafting federal legislative solutions that allow subnational governments flexibility to regulate *within* a “standards framework” provided by the federal government, such that, for example, “where national uniformity is desired, Congress might allow for the development of a single standard by the states themselves, as opposed to the imposition of a standard by the federal government.”<sup>191</sup> In other words, the federal government might set a target, limit, or other regulatory goal and allow subnational governments the ability to take into account local considerations when designing mechanisms to achieve that target or limit. That is, after all, one of the primary justifications for a decentralized form of federal governance.<sup>192</sup> Furthermore, interaction between levels of government “can lead either, or both, parties to adopt policy positions significantly different from the positions they would have adopted had they been regulating in a vacuum,”<sup>193</sup> and “has important benefits in terms of developing quality, responsive regulation, and spreading regulatory innovations.”<sup>194</sup>

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189. *Id.*

190. *Id.* at 162.

191. *Id.*

192. *Id.* at 175.

193. *Id.* at 171.

194. *Id.* at 173. Other scholars, such as Professor Osofsky, have promoted “diagonal federalism” strategies that “incorporate key public and private actors at different levels of government (the vertical piece) and within each level of government (the horizontal piece) simultaneously in order to create needed crosscutting interactions.” Hari M. Osofsky, *Diagonal Federalism and Climate Change: Implications for the Obama Administration*, 62 ALA. L. REV. 237, 241 (2011). In the disaster and land-use context “[t]here is evidence of a shift in governmental policy towards the vertical integration of federal, state, and local governmental action in order to most effectively and comprehensively address land development in disaster prone areas as well as a host of other economic development and environmental problems.” John R. Nolon, *Disaster Mitigation Through Land Use Strategies*, 23 PACE ENVTL. L. REV. 959, 964 (2006).

Discussions of multiscalar, dynamic solutions to federalism problems is certainly important, and the depth of analysis it provides helps curb oversimplification of both the need for and efficacy of different types of solutions to federalism-driven environmental concerns at different levels of government. To be clear, this Article fully supports, as a normative matter, jurisdictional overlap to the extent that it is viable under current constitutional jurisprudence. There is a danger, however, in allowing a focus on the very real benefits of dynamic federalism to detract from recognition of the current constitutional federalism reality. Despite the clear attractiveness of dynamic federalism in achieving better on-the-ground environmental and land-use law and policy responses—the normative claim for how federalism often does and perhaps should operate—the fact remains that while it may not be preferable from an environmental or land-use perspective, dualism still informs constitutional federalism jurisprudence in some areas—this, of course, is the descriptive constitutional reality.<sup>195</sup> This disconnect between normative and descriptive federalism analysis is evidenced by the debate over the scope of Congress’s Commerce Clause power.<sup>196</sup> Recognizing that “dynamic federalism” exists and is beneficial, and that the federal and state governments should both set regulatory limits on any subject matter, does not make it a current constitutional reality, especially in light of continued judicial and scholarly tussling over the existence of exclusive spheres of governance at various levels of government.

The interstate, commercial impacts of a variety of—if not most—environmental and land-use-related issues are very real, and debate over the constitutional validity of federal legislation aimed at addressing those issues via the Commerce Clause should continue.<sup>197</sup> Yet, despite the fact that dual federalism has never accurately reflected the historical U.S. federalism status quo, in that the federal government regulates some activities that are purely local while state and local governments address issues of national and even global concern,<sup>198</sup> neither does dynamic federalism alone accurately reflect

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195. Engel, *supra* note 183, at 175.

196. *Id.*

197. See generally Blake Hudson, *Commerce in the Commons: A Unified Theory of Natural Capital Regulation Under the Commerce Clause*, 35 HARV. ENVTL. L. REV. 375 (2011).

198. Engel, *supra* note 183, at 167–68. Indeed, most dynamic federalism literature does

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the current U.S. federalism status quo. There remain areas in which dual federalism informs both political and legal decisions for addressing problems long considered the sovereign realm of state and local authority. Some evidence of this can be seen in the continued debates over the scope of the Commerce Clause,<sup>199</sup> and in

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not debate the Constitution at all but rather recognizes that for the most part there is concurrent authority between federal and state governments. As a result, most of the scholarly conversation is not a question of what is constitutional but what form or structure of governance is best. See, e.g., DILEMMAS OF SCALE IN AMERICA'S FEDERAL DEMOCRACY (Martha Derthick ed., 1999); BARRY G. RABE, STATEHOUSE AND GREENHOUSE: THE EMERGING POLITICS OF AMERICAN CLIMATE CHANGE POLICY 1–37 (2004); David E. Adelman & Kirsten H. Engel, *Reorienting State Climate Change Policies to Induce Technological Change*, 50 ARIZ. L. REV. 835 (2008); Robert B. Ahdieh, *Dialectical Regulation*, 38 CONN. L. REV. 863 (2006); Robert B. Ahdieh, *Foreign Affairs, International Law, and the New Federalism: Lessons from Coordination*, 73 MO. L. REV. 1185 (2008); Robert B. Ahdieh, *From Federalism to Intersystemic Governance: The Changing Nature of Modern Jurisdiction*, 57 EMORY L.J. 1 (2007); Robert B. Ahdieh, *When Subnational Meets International: The Politics and Place of Cities, States, and Provinces in the World*, 102 AM. SOC'Y INT'L L. PROC. 339 (2008); Joseph W. Dellapenna, *Law in a Shrinking World: The Interaction of Science and Technology with International Law*, 88 KY. L.J. 809 (2000); Kirsten Engel, *State and Local Climate Change Initiatives: What Is Motivating State and Local Governments to Address a Global Problem and What Does This Say About Federalism and Environmental Law?*, 38 URB. LAW. 1015 (2006); David R. Hodas, *State Law Responses to Global Warming: Is It Constitutional to Think Globally and Act Locally?*, 21 PACE ENVTL. L. REV. 53 (2003); Alice Kaswan, *Climate Change, Consumption, and Cities*, 36 FORDHAM URB. L.J. 253 (2009); Alice Kaswan, *The Domestic Response to Global Climate Change: What Role for Federal, State, and Litigation Initiatives?*, 42 U.S.F. L. REV. 39 (2007); Barry G. Rabe, *North American Federalism and Climate Change Policy: American State and Canadian Provincial Policy Development*, 14 WIDENER L.J. 121, 128–51 (2004); Judith Resnik, *Law's Migration: American Exceptionalism, Silent Dialogues, and Federalism's Multiple Ports of Entry*, 115 YALE L.J. 1564 (2006); Richard B. Stewart, *States and Cities as Actors in Global Climate Regulation: Unitary vs. Plural Architectures*, 50 ARIZ. L. REV. 681 (2008); Michael P. Vandenberg, Jack Barkenbus & Jonathan Gilligan, *Individual Carbon Emissions: The Low-Hanging Fruit*, 55 UCLA L. REV. 1701 (2008); Tseming Yang & Robert V. Percival, *The Emergence of Global Environmental Law*, 36 ECOLOGY L.Q. 615 (2009).

199. See, e.g., Randy E. Barnett, *Foreword: Limiting Raich*, 9 LEWIS & CLARK L. REV. 743 (2005); Eric R. Claeys, *Raich and Judicial Conservatism at the Close of the Rehnquist Court*, 9 LEWIS & CLARK L. REV. 791 (2005); Christy H. Dral & Jerry J. Phillips, *Commerce by Another Name: The Impact of United States v. Lopez and United States v. Morrison*, 68 TENN. L. REV. 605 (2001); Dan Gildor, *Preserving the Priceless: A Constitutional Amendment to Empower Congress to Preserve, Protect, and Promote the Environment*, 32 ECOLOGY L.Q. 821 (2005); Christine A. Klein, *The Environmental Commerce Clause*, 27 HARV. ENVTL. L. REV. 1, 38 (2003); Bradford C. Mank, *Protecting Intrastate Threatened Species: Does the Endangered Species Act Encroach on Traditional State Authority and Exceed the Outer Limits of the Commerce Clause?*, 36 GA. L. REV. 723, 735–36 (2002); Bradford C. Mank, *The Murky Future of the Clean Water Act After SWANCC: Using a Hydrological Connection Approach to Saving the Clean Water Act*, 30 ECOLOGY L.Q. 811, 844–46 (2003); Thomas W. Merrill, *Rescuing Federalism After Raich: The Case for Clear Statement Rules*, 9 LEWIS & CLARK L. REV. 823, 844 (2005); John Copeland Nagle, *The Commerce Clause Meets the Delhi Sands*

continued discussions in both scholarly literature and judicial decisions giving credence to the exclusive regulatory role of state and local governments over land use.<sup>200</sup> Other evidence, however, is largely evidence by omission, in that the federal government has never attempted to assert direct regulatory inputs into subnational policies related to, for example, local zoning schemes, nonpoint source pollution, or private forest management—presumably because the federal government has viewed its hands as constitutionally tied.

In fact, the failure of Congress to pass the National Land Use Policy Act (discussed below) during the most active time of federal environmental regulatory expansion in history, and the voluntary, bilateral nature of the primary federal statute aimed at influencing direct land-use planning, the Coastal Zone Management Act (CZMA), indicates that dual federalist notions remain in the area of land-use planning.<sup>201</sup> If urban sprawl is such a well-recognized problem of national import, driven largely by state and local governments competing for economic growth and development with negative aggregate effects on the environment, why has the federal government not passed a statute to, for example, “establish limit lines and urban growth boundaries for any city in the U.S. over X population?” It could certainly attempt to do so while maintaining the benefits of dynamic federalism, in that local governments could maintain flexibility in designing their own land-use policies within that framework. Yet, the federal government has not yet attempted to claim such authority, almost certainly due to notions of dual federalism. The same might be said regarding land-use planning related to disaster mitigation and prevention. For example, as

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*Flower-Loving Fly*, 97 MICH. L. REV. 174 (1998); Sarah D. Van Loh, *The Latest and Greatest Commerce Clause Challenges to the Endangered Species Act: Rancho Viejo and GDF Realty*, 31 ECOLOGY L.Q. 459 (2004); Lori J. Warner, *The Potential Impact of United States v. Lopez on Environmental Regulation*, 7 DUKE ENVTL. L. & POL’Y F. 321 (1997); Omar N. White, *The Endangered Species Act’s Precarious Perch: A Constitutional Analysis Under the Commerce Clause and the Treaty Power*, 27 ECOLOGY L.Q. 215, 235 (2000); Ernest A. Young, *Just Blowing Smoke? Politics, Doctrine, and the Federalist Revival After Gonzales v. Raich*, 2005 SUP. CT. REV. 1 (2005); Eric Brignac, Comment, *The Commerce Clause Justification of Federal Endangered Species Protection: Gibbs v. Babbitt*, 79 N.C. L. REV. 873, 883 (2001).

200. See *supra* note 16.

201. Indeed, though the CZMA “recognized a national interest in effective coastal management, Congress also recognized that the type of land-use planning and management required was traditionally within the domain of state and local governments.” Kristen M. Fletcher, *Managing Coastal Development*, in OCEAN AND COASTAL LAW AND POLICY 147, 152 (Donald C. Baur et al. eds., 2008).

discussed above in the context of nonpoint source water pollution from agricultural runoff, Professor Craig acknowledges that Congress's operation "within constitutional federalism requirements" has arguably caused it to misjudge the constitutionality of seeking direct regulatory inputs at the federal level into nonpoint pollution assumed to be the sole regulatory purview of the state and local governments.<sup>202</sup> Just the very fact that scholars and Congress continue to ruminate over whether such regulation would be constitutional under the Commerce Clause or are properly exclusive spheres of state and local governance,<sup>203</sup> especially given increasing evidence of the interstate commercial impacts of aggregated land-use policies, demonstrates that notions of dual federalism remain with us and affect land-use law and policy in a very real way.

Until the federal government seeks direct land-use inputs via legislative means and such legislation is either constitutionally validated or denied by the courts, it is hard to discount notions of dualism or to assume that courts will not continue to engage in judicial protections of federalism by wrangling over constitutional provisions like the Commerce Clause. Regardless of whether constitutional federalism should be judicially or politically protected,<sup>204</sup> or whether courts do or do not have the "ability to police the contours of federalism" under doctrines like the Commerce Clause,<sup>205</sup> judicial protections remain in place and courts continue to be in "the business of distinguishing between regulatory

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202. Craig, *supra* note 101, at 179–81. Craig notes that "[c]omprehensive federal regulation of nonpoint source pollution would thus arguably engage the federal government in land use regulation—a type of regulation historically viewed as belonging almost exclusively to more local levels of government" and that "because of federalism restrictions, Congress cannot and has not forced states to assume any regulatory burden with respect to nonpoint sources of water pollution. Therefore, regulation of nonpoint source polluters is left largely to states' individual regulatory discretion." *Id.* at 182, 186.

203. Craig argues that

[a]s a matter of constitutional authority under the Commerce Clause, therefore, the federal government has plenary power to regulate nonpoint source pollution that enters waters that are navigable in fact, which traditionally includes all waters subject to the ebb and flow of the tide. In addition, the federal government can, under *Lopez*, regulate nonpoint source pollution that, in the aggregate, substantially affects interstate commerce.

*Id.* at 212 (footnote omitted).

204. Schapiro, *supra* note 185, at 278–80.

205. Engel, *supra* note 183, at 174.

matters that are left to the states and those that fall within Congress's jurisdictional reach."<sup>206</sup> These judicial protections establish a precedent that points toward a future of continued wrangling over the constitutionality of federal versus subnational regulatory authority over certain subject matter.<sup>207</sup> These remnants of "dual federalism" remain with us,<sup>208</sup> and despite normative claims that dual federalism should go quietly into the night,<sup>209</sup> it is unclear that it will disappear from constitutional, environmental, and, especially, land-use-related jurisprudence any time soon.

If we accept that dual federalism still influences environmental and land-use policy, we can also better understand the operation and full potential of dynamic federalism principles. For example, if the federal government does not currently maintain any recognized constitutional authority over certain forms of subnational land-use planning, then subnational governments may completely disregard or ignore federal targets, limits, or other goals. As a result, there will be no opportunity for "overlapping authority between levels of government,"<sup>210</sup> and local, state, and federal roles will remain constitutionally mutually exclusive, thus undermining the very principles of dynamic federalism.

The goal of this Part and related research<sup>211</sup> is to introduce and develop a framework theory of bimodal federalism whereby scholars assess the *current* status of the constitutional institutions that facilitate the federal form of governance, including notions of dynamic federalism and remnant notions of dual federalism that

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206. *Id.* at 183. It may be true that "such line drawing forces the Court into making superficial distinctions of little relevance to the issue of whether federal regulation is truly appropriate." *Id.* at 184. Whether the federal government should be able to regulate certain subject matters, however, is a distinct question from current judicial interpretations of constitutional structure.

207. *Id.* at 174.

208. *Id.* at 175.

209. *Id.*; see also Erwin Chemerinsky, *Empowering States When It Matters: A Different Approach to Preemption*, 69 BROOK. L. REV. 1313 (2004); Erwin Chemerinsky, *Federalism Not as Limits, But as Empowerment*, 45 U. KAN. L. REV. 1219 (1997); Renee M. Jones, *Dynamic Federalism: Competition, Cooperation and Securities Enforcement*, 11 CONN. INS. L.J. 107 (2005); Schapiro, *supra* note 185.

210. Engel, *supra* note 183, at 161.

211. The author has written a series of recent articles related to this model of federalism. See Hudson, *supra* notes 17, 181, 197 and *infra* note 246. See also Blake Hudson, *Federal Constitutions, Global Governance, and the Role of Forests in Regulating Climate Change*, 87 IND. L.J. (forthcoming 2012).

manifest legally and politically, notwithstanding normative claims that those manifestations should not occur. The insights derived from bimodal federalism analysis allow us to consider the relative viability and appropriateness of legislative responses based upon any currently recognized institutional constraints at any level of governance. Bimodal federalism theory should encapsulate a snapshot of U.S. federalism at a point in time, taking into account current practical applications of past federalism theory (dual federalism)<sup>212</sup> and assessing them within the same framework as current applications of new theories of federalism (dynamic federalism).<sup>213</sup> Doing so provides not only a clearer conception of the current state of constitutional affairs regarding federal, state, or local regulatory authority over certain subject matter, but also the most effective methods of overcoming potential federalism-driven regulatory roadblocks.

This Article accepts the normative claim that there should be as much overlap as possible in jurisdictional regulatory authority to capture the benefits of dynamic federalism, and to the extent one level of government is not tackling an important issue, other levels of government should be able to fill the void. Thus, federal, state, and local governments should share regulatory responsibilities, and none should be arbitrarily precluded or preempted from addressing any regulatory target.<sup>214</sup> Arbitrary preclusion, however, is different from preclusion based upon the reality of current constitutional jurisprudence. As such, bimodal federalism acknowledges that there may be judicially and politically driven dualistic notions regarding certain regulatory targets that must be taken into account when crafting regulatory responses, notwithstanding increased recognition of, and normative claims for, a movement towards governance via dynamic federalism. To the extent that remnant dualist notions remain and restrain the operation of dynamic federalism, this Article seeks to develop an understanding of what types of legislative mechanisms most readily provide viable policy responses, including an assessment of the constitutional viability of those responses. In other words, what legislative mechanisms across levels of governance

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212. Engel, *supra* note 183, at 175.

213. *See generally id.*

214. As Professor Engel has noted, there is “danger [in] charging any one level of government with environmental protection and closing the door to the policy-making efforts of other levels of government.” *Id.* at 181.



are not only normatively desirable, given dynamic federalism, but are also constitutionally permissible in areas where dualistic notions remain, such as the area of land-use planning? This constitutional analysis serves as a reference point for legislators seeking to implement effective solutions without constitutional complication and for courts adjudicating conflicts over allocation of regulatory authority.

To this end, it becomes necessary to independently assess the well-recognized concepts<sup>215</sup> of “top-down,” “bilateral,” and “horizontal” legislative responses to addressing federalism issues. It is necessary to utilize these concepts because in an area where dualist remnants remain, such as exclusive subnational regulatory authority over general land-use planning, there may currently be no constitutionally viable top-down federal approach available. As a result, bilateral and horizontal approaches are the only mechanisms that may overlap in a dynamic way. Thus, given the reality of the dynamic/dualist nature of U.S. federalism, it is important to consider the actual legislative mechanisms facilitating regulatory solutions across levels of government. This is especially so considering that dynamic federalism principles may be stifled in the presence of constitutional roadblocks at any one level of governance.

The usage of these terms, however, is not intended to refer back to strict dual-federalism theory, which analyzed these mechanisms as mutually exclusive means of facilitating governance in federal systems. Rather, consistent with dynamic-federalism theory, these mechanisms may be operating simultaneously at all levels of governance.<sup>216</sup> Indeed, as dynamic federalism scholars have

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215. See Osofsky, *supra* note 194, at 276, 278–80; see also Craig Anthony Arnold, *The Structure of the Land Use Regulatory System in the United States*, 22 J. LAND USE & ENVTL. L. 441 (2007); William W. Buzbee, *Contextual Environmental Federalism*, 14 N.Y.U. ENVTL. L.J. 108 (2005); William W. Buzbee, *Recognizing the Regulatory Commons: A Theory of Regulatory Gaps*, 89 IOWA L. REV. 1, 49–56 (2003); Ann E. Carlson, *Iterative Federalism and Climate Change*, 103 NW. U. L. REV. 1097 (2009); Allan Erbsen, *Horizontal Federalism*, 93 MINN. L. REV. 493 (2008); Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570 (1996); Noah D. Hall, *Toward a New Horizontal Federalism: Interstate Water Management in the Great Lakes Region*, 77 U. COLO. L. REV. 405 (2006).

216. Indeed, the extensive scholarly literature cited in *supra* notes 198 and 215 is often grouped under the heading of dynamic federalism and explores these different types of relationships. This Article lays out the three fundamental modalities most often discussed, each of which could be pieces of a dynamic approach, but which also must take into account remnants of dual federalism currently being debated in both the scholarly literature and the judiciary.

highlighted, “overlapping jurisdiction may be pivotal to encouraging the more appropriate level of government to respond to a given problem.”<sup>217</sup> As a result, the analysis below is not intended to neatly affix one particular mechanism as the *only* appropriate solution to one particular category of disaster. The “coupling” in the analysis below seeks to associate one particular mechanism with one or more categories of disaster *only for the purposes* of, first, assessing the potential constitutionality of federal top-down mechanisms for different categories of disaster, and, second, making a normative claim that some disasters may call for more significant federal inputs into subnational land-use policy which some mechanisms might more readily facilitate than others. Thus, it is the *balance* of federal and subnational inputs with which this Article is concerned—a balance that may call for greater federal inputs in circumstances where subnational governments fail to act. For example, in the absence of subnational action to adjust land-use policies related to perpetual disasters, the scale of such disasters and the national interest that they implicate may call for the more consistent and holistic standards facilitated by a top-down approach. At the same time, bilateral and horizontal mechanisms may certainly overlap, supplement, or even exceed any minimum top-down standards that exist, consistent with dynamic federalism. Indeed, this Part echoes disaster scholar Charles Perrow’s call for “[f]ederal and state governments [to] establish *minimum* standards, which states or localities can exceed”<sup>218</sup>—in other words, to establish floors rather than ceilings of environmental and land-use standards.<sup>219</sup> Or perhaps the federal government could establish mandatory guidelines for setting standards, but allow states and localities the flexibility to tailor such standards in a way that not only facilitates the benefits of decentralized governance but that also achieves effective land-use-related disaster mitigation and prevention goals for all categories of disaster.

### *B. Top-Down*

The first mechanism for reconstituting land-use federalism in the context of disaster mitigation and prevention is a top-down approach

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217. Engel, *supra* note 183, at 177.

218. PERROW, *supra* note 140, at 36.

219. Engel, *supra* note 183, at 185.

whereby the U.S. federal government attempts to use currently available constitutional mechanisms to gain legal inputs into subnational land-use policy. This would require either a direct amendment to the U.S. Constitution granting the federal government constitutional authority or it would necessitate expanded judicial interpretation of current constitutional provisions that might grant the federal government such authority.

### *1. Constitutional amendment*

Various scholars have discussed both the need for and the efficacy of amending the U.S. Constitution either to provide citizens a fundamental constitutional right to environmental protection or to allow the federal government to constitutionally regulate the environment via mechanisms that it may not currently employ.<sup>220</sup> Though a constitutional amendment allowing greater federal inputs into land-use policies aimed at avoiding or mitigating environmental disaster is certainly a possibility, this mechanism for reconstituting federalism is perhaps the least likely to occur.

There have been over ten thousand proposed amendments to the U.S. Constitution,<sup>221</sup> and of course only a few have passed—no doubt due to the difficulties of pushing an amendment through the Article V process.<sup>222</sup> Professor J.B. Ruhl has provided a framework for assessing the efficacy and desirability of amending the U.S. Constitution with an “environmental quality amendment” (EQA), noting that calls for such an amendment have been on the rise in

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220. See Robin Kundis Craig, *Should There Be a Constitutional Right to a Clean/Healthy Environment?*, 34 ENVTL. L. REP. 11013 (2004); Gildor, *supra* note 199; J.B. Ruhl, *The Metrics of Constitutional Amendments: And Why Proposed Environmental Quality Amendments Don't Measure Up*, 74 NOTRE DAME L. REV. 245 (1999); Rodger Schlickeisen, *Protecting Biodiversity for Future Generations: An Argument for a Constitutional Amendment*, 8 TUL. ENVTL. L.J. 181 (1994); Pamela B. Schmaltz, Comment, *Is It Time for an Environmental Amendment?*, 38 LOY. L. REV. 451, 461–62 (1992).

221. RICHARD B. BERNSTEIN & JEROME AGEL, *AMENDING AMERICA: IF WE LOVE THE CONSTITUTION SO MUCH, WHY DO WE KEEP TRYING TO CHANGE IT?* 169 (1993). See also JOHN R. VILE, *ENCYCLOPEDIA OF CONSTITUTIONAL AMENDMENTS, PROPOSED AMENDMENTS, AND AMENDING ISSUES, 1789–2002* at 540–58 (2003) (collating most popular proposals by year); Ruth Bader Ginsburg, *On Amending the Constitution: A Plea for Patience*, 12 U. ARK. LITTLE ROCK L.J. 677, 681–93 (1989–90) (discussing the successful passage of various amendments).

222. A constitutional amendment must be proposed by either two-thirds of both houses or two-thirds of state governments and ratified by three-quarters of state governments. U.S. CONST. art. V.

recent decades.<sup>223</sup> EQAs tend to be very general and aspirational, as Ruhl describes, including language such as, “[t]he natural resources of the nation are the heritage of present and future generations. The right of each person to clean and healthful air and water, and to the protection of other natural resources of the nation, shall not be infringed by any person.”<sup>224</sup>

Ruhl developed a matrix to assess the viability of proposed amendments along two axes: a function axis and a target axis.<sup>225</sup> The function axis describes the institutional role that the amendment is to serve, such as whether it (1) alters the operational rules of government, (2) prohibits specified government action, (3) creates or affirms individual rights, or (4) expresses aspirational goals.<sup>226</sup> The target axis describes the societal interaction that is adjusted by the functional change, such as (1) intra- and intergovernmental relations, (2) relations between a government and its citizens, or (3) relations between citizens.<sup>227</sup> Ruhl notes that EQAs tend to fall into a category that no existing amendment to the Constitution does—that of an amendment establishing aspirational goals (function 4) for citizen-citizen relations (target 3). Ruhl believes the Constitution is no place for these types of aspirational dictates,<sup>228</sup> largely because such a mandate must necessarily be drafted either ambiguously or so narrowly as to make implementation exceedingly difficult.

An amendment that would allow U.S. federal government inputs into land-use decisions related to disaster mitigation and prevention, however, would fall into a category far more likely to be efficacious according to Ruhl’s matrix—if, that is, such an amendment could first be passed. Such an amendment might simply declare: “The federal government of the United States maintains the authority to establish regulatory standards for land-use-related disaster mitigation and prevention.” This amendment would have the function of altering the operational rules of government (function 1) in order to

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223. Ruhl, *supra* note 220, at 247, 248–49.

224. *Id.* at 248.

225. *Id.* at 253.

226. *Id.*

227. *Id.*

228. Ruhl states that “any EQA attempting to capture a normative statement about the environment and plug it into the United States Constitution is simply a bad idea,” *id.* at 252, and that “amendments purporting to express aspirational values or regulate civil relations, or do both, should set off bells and whistles in the political evaluation process.” *Id.* at 260.

adjust the target of intergovernmental relations (target 1).<sup>229</sup> Indeed, nine amendments currently fall under this category of the matrix.<sup>230</sup> If U.S. federal and subnational governments one day agreed to change the operational rules of government and the current status of intergovernmental relations by allowing more direct federal inputs into land-use planning via a constitutional amendment, the amendment would fall into the category described by Ruhl as far more likely to be viable in achieving results than aspirational, citizen-citizen relation amendments. Furthermore, though the legislative process is preferable to constitutional amendment a vast majority of the time, lest the constitution become diluted and take the form of a legislative instrument, society may be unable to achieve some policies in the absence of an amendment.<sup>231</sup> Ruhl argues that

[t]he question of need, therefore, is whether there is any institutional barrier to fulfilling the fundamental, widely accepted social policy through routine legislative and judicial forums. . . . [S]ome amendments have forced an intransigent minority of states to come into line with the rest of the nation on fundamental social policy issues associated with matters traditionally (or constitutionally) left to state jurisdiction. Where federal legislation cannot impose the policy over state resistance and the courts cannot mold the existing constitutional text to handle the stubborn states, an amendment is the only alternative. These are examples of institutional necessity, where an amendment, and only an amendment, can allow the widely accepted social policy to move forward in society.<sup>232</sup>

There is arguably an institutional barrier to certain federal regulatory inputs into local land-use policies—a barrier in the form of current understandings of U.S. constitutional law. Furthermore, the dearth of responsible state and local government land-use planning related to disaster mitigation and prevention demonstrates that an amendment allowing greater federal inputs into subnational land-use

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229. It would not be prohibitory (target 2) because it would allow the states to also set land-use standards related to disaster prevention and mitigation, consistent with principles of dynamic federalism. It also would not create or affirm any rights in either private parties or governmental entities (target 3), and it is clearly not aspirational (target 4), as is an EQA.

230. Ruhl, *supra* note 220, at 261.

231. *Id.* at 270–71.

232. *Id.* at 271 (footnotes omitted).

policy *could* be a last resort to overcoming that barrier with the most effective social policy.

Other scholars have similarly argued for constitutional amendments to rebalance the relationship between the U.S. federal government and the states, which would allow greater federal inputs into environmental policy making when the states refuse to act.<sup>233</sup> This type of amendment would be a “purely structural amendment,”<sup>234</sup> rather than a substantive amendment providing a right to a clean and healthy environment, and it would merely “empower[] Congress to legislate regarding the environment”<sup>235</sup> if Congress chose to do so. In other words, nothing would compel the federal government to act, nor would any new fundamental constitutional rights be created in the citizenry.

The likelihood of an amendment being efficacious, however, is a different question from whether such an amendment is likely to be passed. The U.S. Congress has never attempted to harness *current* constitutional powers to directly address subnational land-use policy, much less placed a constitutional amendment on its agenda. So even though this type of structural amendment may be of the kind most likely to be workable if enacted, and remains an option worthy of future study, it remains perhaps the least viable mechanism for reconstituting federalism to address transitory and perpetual disasters—especially given the difficulty of convincing three-quarters of the states to ratify an amendment that intrudes on state regulatory powers, and given that any kind of “constitutional environmental amendment is unlikely in the current political climate.”<sup>236</sup> An amendment, however, is not the only top-down mechanism available to the United States, as current constitutional provisions may provide the federal government authority over subnational disaster-related land-use policy that it has not yet claimed or that has not yet been validated by courts interpreting the Constitution.

## *2. Constitutional interpretation*

A more viable mechanism for top-down reconstitution of federalism for certain types of disaster mitigation and prevention is

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233. Craig, *supra* note 220, at 11018–20.

234. *Id.* at 11020.

235. Gildor, *supra* note 199, at 823.

236. Craig, *supra* note 220, at 11018.

expanded understanding of current constitutional provisions. In the United States, the Commerce Clause is the primary constitutional provision under which most environmental legislation is passed.<sup>237</sup> Congress could certainly pass a “Land Use Disaster Mitigation and Prevention Act” that would test the waters of judicial interpretation regarding the scope of Congress’s authority under the Commerce Clause. Of course, the purpose of the transitory/perpetual spectrum is to demonstrate for which types of disasters it might be more constitutionally viable for the federal government to gain direct regulatory inputs. Therefore, if such a statute sought to limit or set other land-use policies and rules for the development of floodplains in the Mississippi River Valley, due to the frequent and interjurisdictional (interstate) economic damages resulting from major flood events, then under Commerce Clause jurisprudence such an act might be more likely to be found constitutional. The same holds true for potential federal regulation of nonpoint source agricultural pollution that empties from the Mississippi River Valley and leads to eutrophication of the Gulf, negatively impacting fisheries, and for land-use policies that exacerbate the spread of invasive species that have devastating economic impacts across state jurisdictions—like the cogongrass that plagues the forest industry.

These types of disasters, though related to private land-use regulation that has historically been the constitutional purview of state and local governments, may very well be reached under the “substantial effects” test for determining the constitutionality of federal action under the Commerce Clause.<sup>238</sup> Numerous federal statutes regulating natural resources have been upheld under this test,<sup>239</sup> including the Endangered Species Act, which was upheld even for the regulation of wholly intrastate species with arguably

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237. U.S. CONST. art. I, § 8, cl. 3.

238. Congress can regulate three kinds of activities under the Commerce Clause: (1) the channels of interstate commerce, (2) the instrumentalities of interstate commerce, and (3) “those activities having a substantial relation to interstate commerce, . . . i.e., those activities that substantially affect interstate commerce.” *United States v. Lopez*, 514 U.S. 549, 558–59 (1995) (citations omitted).

239. *Gonzales v. Raich*, 545 U.S. 1 (2005) (marijuana); *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687 (1995) (endangered species); *United States v. Riverside Bayview Homes, Inc.*, 474 U.S. 121 (1985) (wetlands); *Hodel v. Indiana*, 452 U.S. 314 (1981) (minerals); *Hodel v. Va. Surface Mining & Reclamation Ass’n*, 452 U.S. 264 (1981) (minerals); *Tenn. Valley Auth. v. Hill*, 437 U.S. 153 (1978) (endangered species); *Wickard v. Filburn*, 317 U.S. 111 (1942) (wheat).

tenuous connections to interstate commerce.<sup>240</sup> How much more so, then, might land-use policies that implicate agricultural, commercial, and industrial impacts on navigable waterways (floodplains and water bodies affected by nonpoint runoff); that implicate commercial and other development in the coastal zone (impacted by hurricanes, floods, and sea-level rise); and that exacerbate interjurisdictional impacts and federal disaster relief expenditures, be found to substantially affect interstate commerce? Unlike endangered species, after all, agricultural and fisheries products are commodities that are exchanged on the open market. The development of floodplains and the coastal zone also implicates commercial activity with direct ties to a resource over which the federal government has already been found to have constitutional authority—"navigable waters" as that term is interpreted under the Clean Water Act.

Recent research establishes a unified theory for assessing the validity of Congressional authority to regulate the environment, doing so through the lens of commons analysis.<sup>241</sup> This analysis demonstrates that the federal government has traditionally maintained constitutional authority to regulate two categories of environmental resources as substantially affecting interstate commerce: (1) natural resources contained on land (wetlands, endangered species, or other natural capital) that are appropriated by economic development (retail, housing, industrial, agricultural, etc.), and (2) resources appropriated by individuals and tied to an interstate market (wheat, marijuana, or other natural capital commodities). Floodplains appropriated by economic development, the spread of invasive species exacerbated by industrial operations (and thus appropriating native flora and fauna), and clean Mississippi River and Gulf water appropriated by agricultural and industrial pollution all arguably fall under these tests. Anytime these mechanisms of economic development replace the wetlands of floodplains, native flora and fauna, or clean interjurisdictional waters, there is an appropriator of the resource (such as a developer or an industrial operator) and a resource that is being appropriated (such as floodplain wetlands, native flora and fauna, or clean water). These are the constituent components of a commons, and it is this act of

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240. *Rancho Viejo, LLC v. Norton*, 334 F.3d 1158, 1160 (D.C. Cir. 2003) (Roberts, J., dissenting).

241. Hudson, *supra* note 197.



“appropriation” that substantially affects interstate commerce and that gives the federal government constitutional authority over resource management.<sup>242</sup>

Disaster law scholars have questioned whether the Commerce Clause might be harnessed to allow more direct involvement by the federal government in land-use-related disaster mitigation and prevention, asking, for example, “[w]hat if Congress decided, in advance of a disaster, to mitigate disaster risk by regulating local land use? Would it have Commerce Clause authority, for instance, to create federal zoning laws prohibiting building within 100 feet of an earthquake fault?”<sup>243</sup> Other disaster scholars have directly advocated for greater top-down inputs from the federal government, asserting,

We need a more centralized regulatory system. Local initiative is simply not reliable in the case of mitigation. Localities are reluctant to enforce state standards, national standards are few, and enforcement is lax. This is an area where centralized regulation—standards and enforcement—is needed; given the political influence of growth-oriented city officials and property and building interests, there is bound to be a “failure” of the private market.<sup>244</sup>

In the specific context of flooding and sea-level rise, the Association of State Floodplain Managers have similarly argued for more top-down inputs, incorporating elements of dynamic federalism, asserting that,

A nationwide vision and policy for water resources sustainability and flood loss reduction are essential. This would require legislation incorporating both a national floodplain management policy and a national riparian and coastal areas policy. The act should establish unequivocally both the value to the nation of these resource areas and their natural functions, as well as their inherent hazards. This policy needs to be supported with a comprehensive legislative package to be coordinated with and implemented through states, local governments, tribes, governors, and others. . . . A high-level, central point of coordination and implementation is needed to ensure that water-related laws and programs at all levels are seamlessly aligned and integrated. This could be a new federal agency or other entity . . . . We must consider carefully the central question of whether a national policy

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242. *See id.* at 423–27.

243. FARBER ET AL., *supra* note 1, at 79.

244. PERROW, *supra* note 140, at 37.

of water resources “development” is still relevant for 2050 and beyond or whether a policy of water resources “sustainability” that balances human and ecosystem needs is a wiser approach.<sup>245</sup>

Ultimately, if the federal government seeks regulatory inputs into what the spectrum categorizes as perpetual or “gray area” disasters, there are strong arguments that it may do so pursuant to its Commerce Clause authority. Not only do perpetual and “gray area” disasters more clearly impact interstate commerce, but they also result in greater federal expenditures in disaster relief due to their scale—thus implicating greater national interest. Furthermore, due to the great scale of these disasters, the federal government has more governance capacity to both set federal minimum standards and enforce regulatory authority than do the many disparate state and local governments along the Mississippi watershed or across jurisdictions plagued by invasive species. The corollary, however, is that a top-down mechanism for addressing transitory disasters is far less likely to be constitutionally viable. Land-use policies that exacerbate localized flooding, fires, and urban heat waves are more likely to have impacts limited to a local area, where state and local governments would have more governance capacity and information to craft and enforce standards. In addition, the case for their substantial effects on interstate commerce would arguably be harder to make.

To be clear, a top-down mechanism is not without complication. While perpetual disasters may be more readily considered to have a substantial effect on interstate commerce than, say, endangered species protection, they also fall more squarely within the category of a direct land-use activity traditionally regulated by state and local governments, such as zoning of commercial and residential structures. This is because regulation of endangered species may only indirectly impact land-use activities otherwise subject to state regulatory authority.<sup>246</sup> This makes passage of such legislation more difficult as a political matter, especially given the current political climate.<sup>247</sup> The federal government may perceive that it is just as

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245. ASS'N OF STATE FLOODPLAIN MANAGERS, *supra* note 41, at 35.

246. See Blake Hudson, *Climate Change, Forests, and Federalism: Seeing the Treaty for the Trees*, 82 U. COLO. L. REV. 363, 388–94 (2011).

247. The 2009 midterm congressional elections resulted in the largest shift in power in the House of Representatives since 1948 and ushered in representatives opposed to not only climate cap and trade, but also a wide swath of environmental regulatory policies. Quinn

limited in enacting limits on floodplain development, nonpoint source water pollution, or invasive species as it would be setting growth boundaries around major U.S. cities, a zoning-driven mechanism of land-use regulation currently the responsibility of the states. Therefore, legal perception becomes political reality, as the government politically acts as if its hands are tied due to perceived legal constraints. In addition, an act granting top-down land-use planning authority, even if passed, would be subject to other legal protections afforded to private property owners, such as the Fifth Amendment Takings Clause. Even so, it certainly seems that regulation requiring minimum standards for land-use planning in these types of disaster prone areas could be crafted to avoid such constitutional complications and could further be structured to maintain the benefits provided by decentralized land-use policy. Ultimately, though the constitutionality of federal subnational land-use legislation has yet to be tested by the U.S. Congress and within U.S. courts, there are good arguments supporting its legitimacy and expanded constitutional interpretation may be a viable top-down mechanism for addressing perpetual and “gray area” disasters.<sup>248</sup>

A top-down approach, however, for reconstituting federalism to mitigate and prevent land-use-related disasters is not a necessary or inevitably preferable mechanism. While top-down inputs can certainly be crafted in a way that preserves decentralized land-use governance and the role of subnational governments in crafting either their own policies or policies supplemental to federal policy, top-down approaches are not without hazard. Improperly crafted top-down prescriptive regulation “often leads to an increasing spiral of tightening regulations, which progressively jeopardise the viability” of decentralized governance.<sup>249</sup> As such, bilateral and horizontal approaches should also be considered.

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Bowman & Chris Amico, *Congress Loses Hundreds of Years of Experience—But Majority of Incumbents Stick Around*, PBS NEWSHOUR (Nov. 5, 2010, 11:00 AM), <http://www.pbs.org/newshour/rundown/2010/11/congress-loses-hundreds-of-years-of-experience---but-vast-majority-of-incumbents-stick-around.html>; Renee Schoof, *With GOP in Charge of House, Environmental Policy Will Shift*, MCCLATCHY NEWSPAPERS (Nov. 3, 2010), <http://tinyurl.com/7fn2t3y>; *The Most Anti-Environment House in History*, COMM. ON ENERGY & COMMERCE DEMOCRATS, <http://tinyurl.com/5ta3g93> (last visited Oct. 14, 2011).

248. See generally Hudson, *supra* note 197.

249. Graham R. Wilkinson, Forest Practices Bd., Codes of Forest Practice as Regulatory Tools for Sustainable Forest Management 3, paper presented to the 18th Biennial Conference of the Institute of Foresters of Australia (Oct. 3–8, 1999) (citation omitted) (“In contrast, a

*C. Bilateral*

A bilateral approach to reconstituting federalism involves the federal government incentivizing subnational governments to take action on land-use planning aimed at mitigating or preventing disasters, which can be accomplished in two basic ways. The first is a cooperative federalism approach whereby the federal government passes an act establishing minimum disaster-related land-use planning standards to which subnational governments can voluntarily bind themselves, while at the same time receiving “carrots” in the form of financial payments or authority to dictate policy over matters that might otherwise be the purview of the federal government. The second approach is one of “uncooperative federalism,” whereby the federal government might use other constitutional “sticks” at its disposal, such as wielding the spending power and refusing to fund projects within subnational jurisdictions or refusing to provide some other entitlement subnational governments normally receive. Under either approach, the federal government “encourages” the states to develop minimum land-use planning standards. Indeed, scholars have noted that in other land-use contexts, such as urban sprawl, “the complex institutional terrain affecting [land use] requires substantial reliance on outright acquisition of important green spaces as well as reliance on regulatory strategies that entice participants, rather than prescribe a particular urban form or seek to punish or coerce regulatory targets.”<sup>250</sup> Unlike the top-down approaches discussed in the previous section, which are likely more constitutionally viable for perpetual or “gray area” disasters than for transitory ones, a bilateral mechanism may be utilized effectively and without constitutional constraint for all disaster categories along the spectrum.

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self-regulatory approach can avoid unnecessary bureaucratic costs and provide greater flexibility and autonomy for industry, in return for improved environmental performance.”).

250. Buzbee, *supra* note 96, at 61. Indeed, one suggested approach for floodplain management is federal purchase of properties at risk for flooding. The severe Midwest floods of 1993 resulted in the federal government buying 25,000 flooded residential properties at a cost of \$1 billion in a “voluntary buyout program designed to return floodplains to their natural state.” FARBER ET AL., *supra* note 1, at 34.

*1. Cooperative federalism*

Under a cooperative federalism approach, the federal government could pass a “Land Use Disaster Mitigation and Prevention Act” (LUDMPA) that sets minimum land-use planning standards for disaster mitigation and prevention. The states would develop their own land-use plans consistent with federal standards, perhaps through the modification of their enabling acts, and would voluntarily opt into the program based upon a variety of financial, political, and legal incentives. Pursuant to dynamic federalism principles, the state governments in turn could allow for local government flexibility in setting those standards based upon local needs and constraints, and would be allowed to set standards more rigorous than or supplemental to federal standards. Subnational governments would receive funds to implement the program, and might also gain a degree of authority over not only federal actions, but also the actions of adjacent subnational governments, to ensure that those actions are consistent with the state plan. As discussed further below, subnational governments refusing to opt into the act might be induced to do so based upon a variety of disincentives, such as the withdrawal of federal funds for projects within the jurisdiction if they do not opt in within a certain time frame.

The LUDMPA could operate like a combination of the proposed National Land Use Policy Act (NLUPA), which the U.S. Senate passed twice in the early 1970s, but which was never enacted,<sup>251</sup> and the more narrow but ultimately (and relatively) successful CZMA.<sup>252</sup> The purpose of the NLUPA was

to establish a national policy to encourage and assist the several States to more effectively exercise their constitutional responsibilities for the planning, management, and administration of the Nation’s land resources through the development and implementation of comprehensive “Statewide Environmental, Recreational and Industrial Land Use Plans” . . . and management programs designed to achieve an ecologically and environmentally sound use of the Nation’s land resources.<sup>253</sup>

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251. See, e.g., John R. Nolon, *The National Land Use Policy Act*, 13 PACE ENVTL. L. REV. 519, 520–21 (1996).

252. Coastal Zone Management Act of 1972, 16 U.S.C. §§ 1451–1466 (2006).

253. S. 3354, 91st Cong., 116 CONG. REC. S1760, S1761 (Jan. 29, 1970).

NLUPA would have provided funding to states to develop their own land-use management plans in accordance with federal standards as well as a robust provision of data to assist the states in developing such plans.<sup>254</sup> Furthermore, the NLUPA would have established a federal agency whose role would have been to coordinate and ensure other federal agency compliance with state plans.<sup>255</sup> State plans, in turn, were to designate areas of conservation and areas of development,<sup>256</sup> and states with approved plans would have been required to set management standards for five categories of land use of “more than local concern”<sup>257</sup>:

- (1) all development in areas of “critical environmental concern”; e.g., beaches, wetlands, important wildlife habitats, and historic sites;
- (2) key facilities, such as major airports, highway interchanges, and recreational facilities;
- (3) large scale developments, such as industrial parks, shopping centers, and major subdivisions;
- (4) regional public or private facilities, such as solid waste disposal or sewerage systems that significantly affect surrounding land uses; and
- (5) major recreational or second-home development of rural land.<sup>258</sup>

The NLUPA would have “established a clear role for each level of government and insured that their activities would be coordinated.”<sup>259</sup> Perhaps more importantly, “[i]t would have integrated local, state and federal systems.”<sup>260</sup> Some have argued that “had such a law been adopted before the complex structure of environmental law was cobbled together, the cost, complexity and confusion of the current system could have been lessened.”<sup>261</sup> The

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254. 1 PATRICIA E. SALKIN, *AMERICAN LAW OF ZONING* § 3:2 (5th ed. 2011).

255. *Id.*

256. John R. Nolon, *Fusing Economic and Environmental Policy: The Need for Framework Laws in the United States and Argentina*, 13 *PACE ENVTL. L. REV.* 685, 719 (1996).

257. John H. Davidson, *Ecosystem Management in the Smaller Watershed*, 2 *GREAT PLAINS NAT. RESOURCES J.* 68, 76 (1997).

258. *Id.*

259. Nolon, *supra* note 256, at 724.

260. *Id.*

261. *Id.* at 718.

voluntary approach, which promoted incentives to cooperate over adherence to rigid standards,<sup>262</sup> was intended to “lessen the ‘needless and costly conflicts between agencies and departments of the Federal Governments, between State and Federal Government, and between State and local government.’”<sup>263</sup> In other words, this approach has the potential to alleviate the problems created by an overly zealous top-down approach. Of course, the flip-side is that it might also have less “bite” in achieving results on the ground because there is no legally coercive foundation for ensuring the standards are put into place.

Though the NLUPA was not passed, the United States has already experimented with a bilateral approach in the land-use context with CZMA, which was passed to gain greater state involvement in the protection of the coastal zone and was based upon a variety of federal standards.<sup>264</sup> Many had hoped the CZMA would be part of a larger land-use management act, such as the NLUPA,<sup>265</sup> but the CZMA was “successful” where the NLUPA failed in part “due to the fact that it both aided development while preserving the environment.”<sup>266</sup>

The CZMA program is completely voluntary, but the federal government provides incentives to induce states to opt in.<sup>267</sup> The first incentive is simply funding the program’s implementation, which is to be used to

preserve or restore specific areas in the state because of their conservation, recreational, ecological, or aesthetic values, or contain one or more resources of national significance; to redevelop . . . deteriorating or underutilized urban waterfronts or ports; to provide public access to public beaches, coastal waters and areas of recreational, historical, aesthetic, ecological or cultural significance;

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262. *Id.* at 724.

263. *Id.* at 724–25 (citing Senator Henry Jackson introducing Senate Bill 3354, National Land Use Policy Act of 1970, 116 CONG. REC. S1757, S1759 (Jan. 29, 1970)).

264. SALKIN, *supra* note 254, § 3:3.

265. Marc R. Poirier, *Environmental Justice and the Beach Access Movements of the 1970s in Connecticut and New Jersey: Stories of Property and Civil Rights*, 28 CONN. L. REV. 719, 751 (1996).

266. SALKIN, *supra* note 264, §3.3.

267. *Id.*

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or to develop a coordinated process for regulating permits for aquaculture facilities.<sup>268</sup>

The second incentive is perhaps more enticing from a state government point of view. The state effectively gains authority over the actions of both the federal government and other state governments that it would not otherwise have.<sup>269</sup> After the federal government has approved a state plan, the federal government cannot undertake any action or even issue any permits for others to take action within the state's coastal zone unless those actions are found by the state to be "consistent" with the state's plan.<sup>270</sup> So, for example, the U.S. Coast Guard may want to build a new facility within a state's coastal zone. Though the agency previously had the authority to do so at its discretion, it now must obtain confirmation from the state in which the facility is to be located that siting of the facility will be consistent with the state's CZMA implementation plan. The same holds true for the actions of adjacent states in the coastal zone—there is a reciprocal responsibility for adjacent states to act, or authorize other parties to act, consistent with their neighbors' plans.<sup>271</sup> At present, thirty-four U.S. states and territories maintain agencies approved by the federal government to implement the CZMA.<sup>272</sup>

Though the NLUPA was never enacted, and the CZMA has been criticized as inconsistent<sup>273</sup> and may not have the "bite" that it perhaps could have, these examples of bilateral approaches to reconstituting the balance of federal and subnational roles in land-use policy provide models for how a similar act might be structured for disaster-related land-use planning. Furthermore, the great degree of flexibility that a bilateral mechanism facilitates would be equally viable, *if structured properly*, for addressing perpetual, transitory, or "gray area" disasters, either supplemental to, or in lieu of, top-down or horizontal approaches. Therefore, a bilateral approach could be coupled with, or supplemental to, top-down or horizontal

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268. *Id.* (footnotes omitted).

269. *See id.*

270. *Id.*

271. *Id.*

272. *Id.*

273. *See, e.g.,* Bradley C. Karkkainen, *Biodiversity and Land*, 83 CORNELL L. REV. 1, 81 (1997).



approaches related to the same or other categories of disaster consistent with principles of dynamic federalism.

## 2. *Uncooperative federalism*

Uncooperative federalism is the “mostly stick” end of the bilateral spectrum, with the federal government not providing “carrots” in the form of positive incentives for cooperation, but rather disincentives through the threat of withholding federal funds from states.<sup>274</sup> The federal government may withhold federal highway funds, for instance, as it has successfully done in other contexts.<sup>275</sup> Or the federal government could withhold funds that it normally funnels to the states to implement other federal statutes for which the federal government maintains constitutional authority, such as the Clean Water Act in the United States. Professor Buzbee has noted that

[o]ne of the most promising and traditional methods for the federal government to encourage state or local actions consistent with a federal goal is to provide conditional federal funding for certain state or local activities. Given the substantial undercutting by the Supreme Court of other federal strategies to enlist states in furthering federally defined ends, conditional federal spending has become a particularly significant regulatory strategy.<sup>276</sup>

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274. This usage of the phrase “uncooperative federalism” is only meant as a descriptor and is not to be confused with any particular theory of federalism. *See, e.g.*, Jessica Bulman-Pozen & Heather K. Gerken, *Uncooperative Federalism*, 118 YALE L.J. 1256, 1263 (2009) (providing a theory of uncooperative federalism that takes “a fully developed account of the ways in which states playing the role of federal servant can also resist federal mandates”).

275. *E.g.*, *South Dakota v. Dole*, 483 U.S. 203 (1987).

276. Buzbee, *supra* note 96, at 107. Professor Nolon has argued that the Disaster Mitigation Act of 2000 (DMA) provides a model of federal, state, and local interaction that “could be a blueprint for an integrated federalist approach to a host of land use and environmental problems.” Nolon, *supra* note 194, at 965. The DMA relies in part on uncooperative federalism approaches, requiring that subnational governments develop mitigation plans that identify hazard risks in their jurisdictions in order to qualify for federal hazard mitigation grants. *Id.* Even so, “there is little emphasis in [the regulations] on the use of effective local land-use strategies to create disaster resilient, or adaptive, communities.” *Id.* at 967. This does not mean, however, that some states and local communities are not influenced by the DMA to engage in more robust land-use planning in disaster prone areas. *E.g.*, CITY OF BOULDER, COLO., BOULDER VALLEY COMPREHENSIVE PLAN (2008), *available at* <http://www.bouldercolorado.gov/files/PDS/BVCP/bvcp.pdf>; Growth Management Act, WASH. REV. CODE § 36.70A (2008).

Further highlighting the potential benefits of a bilateral approach, Professor Buzbee states that “monetary enticements to encourage participation in [land-use] initiatives are likely the most effective device to surmount complex institutional frameworks where no unitary entity with coercive authority exists and where different local needs may lead to different levels of interest in such programmatic goals.”<sup>277</sup>

At a minimum, the federal government could withhold expenditures for programs that exacerbate land-use-related disasters. Indeed, experts argue that a clear way to mitigate and prevent flooding in local communities is to restrict federal expenditures that could “foster development or infrastructure in high-risk and/or environmentally sensitive areas.”<sup>278</sup> These experts argue that federal programs that fund and subsidize development or redevelopment in flood-prone areas—including disaster relief—“unwittingly provide for making unwise decisions and taking inappropriate action with regard to our water resources.”<sup>279</sup> This is the approach of the Coastal Barrier Resources Reauthorization Act of 2000 (CBRA),<sup>280</sup> another example of a current bilateral mechanism aimed at flooding and damage in coastal areas. The CBRA designates undeveloped coastal barrier islands for inclusion in the Coastal Barrier Resource System.<sup>281</sup> Once designated, the Act denies federal funds for new construction on those islands,<sup>282</sup> and “specifically denies direct federal grants for infrastructure improvements, coastal protection projects, and [flood] insurance for any new construction.”<sup>283</sup> The program has had limited success, however, and “[t]he continued development of coastal barrier islands highlights the conclusion that merely denying federal subsidies to coastal floodplains would not prevent their development. Rather . . . property owners may find it

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277. Buzbee, *supra* note 96, at 117.

278. ASS’N OF STATE FLOODPLAIN MANAGERS, *supra* note 41, at 33.

279. *Id.* at 34. Furthermore, a variety of federal agency programs, such as the Department of Housing and Urban Development, the Department of Agriculture, the U.S. Army Corps of Engineers, the Tennessee Valley Authority, and the Economic Development Administration have subsidized and promoted development in floodplains. FARBER ET AL., *supra* note 1, at 32–33.

280. Coastal Barrier Resources Reauthorization Act of 2000, 16 U.S.C. §§ 3501–3510 (2006).

281. *Id.* §§ 3502–3503.

282. *Id.* § 3504.

283. Barnhizer, *supra* note 18, at 339–40.

profitable to incur occasional flood damages in exchange for the high rental returns possible from desirable beachfront properties.”<sup>284</sup>

In reality, to be effective, an uncooperative federalism arrangement would most likely need to be tied to a cooperative bilateral statute. Interestingly, though the NLUPA would have been a voluntary program, it was not without teeth in the sense that it blended cooperative and uncooperative federalism approaches. For example, under the NLUPA, if a state failed to adopt a land-use plan within four years after the act was passed then the state would stop receiving funding for other federal programs, such as highway construction or other public works, which would be reduced by 20 percent a year until the state developed a land-use plan in comport with NLUPA standards.<sup>285</sup> Later amendments to the bill actually strengthened sanctions, providing that if a state did not submit a statewide plan within five years, then “no federal agency was permitted to undertake any new action or financially support any state action that may have a substantially adverse environmental impact.”<sup>286</sup> Such a provision would, for example, grind commercial development in wetland areas to a halt if states did not pass a state plan, as the U.S. Army Corps of Engineers must permit the filling of wetlands connected to “navigable waters” for development.

Ultimately, an uncooperative federalism approach might be a viable tool for reconstituting federalism related to land-use-related disaster mitigation and prevention, especially when coupled with a cooperative federalism statute. Given that the U.S. Congress seriously considered such an approach in the land-use context with NLUPA and has succeeded in a “soft” approach with the CZMA in the environmental and land-use context without state resistance—and indeed with broad state participation—a bilateral statute aimed at subnational land-use-related disaster policy, if properly crafted, might be a successful mechanism for rebalancing federal-state roles in disaster mitigation and prevention. This is especially so if a top-down, expanded constitutional interpretation approach does not prove viable for transitory or other categories of disaster. For

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284. *Id.* at 340.

285. Jayne E. Daly, *A Glimpse of the Past—A Vision for the Future: Senator Henry M. Jackson and National Land-Use Legislation*, 28 URB. LAW. 7, 12 (1996) (citing National Land Use Policy Act of 1970, S. 3354, 91st Cong. § 407(1), 116 CONG. REC. S1757, S1762 (Jan. 20, 1970)).

286. *Id.* at 18.

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transitory disasters, in fact, a bilateral mechanism might be the most viable as it would perhaps be the best way to capitalize on local information and decision-making; its voluntary nature would also avoid federalism concerns because transitory disasters implicate land-use planning more closely tied to traditional state and local functions.

*D. Horizontal*

A horizontal approach to reconstituting federalism would result if subnational governments agreed with other subnational governments to take collective action to address land-use planning in the disaster law context—even in the absence of a top-down mandate or voluntary bilateral program. For example, states can create regional land-use disaster management plans, whereby each agrees to legislate minimum standards related to the siting of development in disaster-prone areas, the structural requirements that mitigate disaster destruction, and other standards.

A top-down approach is a compulsory mechanism for the federal government to reconstitute federalism, while a bilateral approach operates by federal provision of incentives to do the same. Horizontal approaches, on the other hand, rely almost entirely on the volition of subnational governments (unless the horizontal approaches are themselves induced by federal incentives). This is the same volition, notably, that currently facilitates a great degree of subnational government *inaction* on crafting disaster-related, land-use planning standards. In this way, horizontal approaches may be unlikely, absent some other change in the status quo spurred by higher levels of governance. Ultimately, it is unclear why subnational governments that currently fail to maintain individual jurisdictional standards related to disaster land-use planning would band together to craft standards with a group of other states or local governments.

Indeed, forging horizontal approaches can be intractable in the absence of incentives or mandates from a higher regulatory authority, or from sustained, increased attention and pressure from civil society.<sup>287</sup> As Professor Buzbee describes in the context of land-use policies exacerbating urban sprawl,

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287. Buzbee, *supra* note 96, at 94.

[Local government] officials will in most instances not surrender authority [for horizontal approaches] . . . . Greater governmental consolidation and coordination might reduce sprawl and its associated ills, but it is difficult to see how such consolidation and coordination would come about in the absence of a period of heightened citizen political involvement sufficient to persuade the state government to modify the authority granted to local governments.<sup>288</sup>

Even so, this approach should be briefly discussed, as it is not without precedent. In the disaster context, though not related specifically to land-use-related disaster mitigation and prevention policies, a horizontal example exists in the form of the Emergency Management Assistance Compact (EMAC).<sup>289</sup> EMAC is an interstate compact providing for mutual cooperation among states to supplement federal response and aid subsequent to disaster events.<sup>290</sup> The EMAC establishes that “[e]ach party state entering into this compact recognizes that many emergencies transcend political jurisdictional boundaries and that intergovernmental coordination is essential in managing these and other emergencies under this compact.”<sup>291</sup> All fifty states have entered the compact, and the National Emergency Management Association has prepared “Model Intrastate Mutual Aid Legislation” to “facilitate mutual aid agreements between political subdivisions of a state.”<sup>292</sup> EMAC proved to be one of the few relative successes in facilitating response after Hurricane Katrina.<sup>293</sup>

There are additional reasons that state or local governments might band together to create, for example, “Regional Land Use Disaster Management Standards.” The first is simply federal inaction. In the climate change context, federal inaction has spurred the creation of a number of carbon cap-and-trade initiatives aimed at curbing carbon emissions. These cap-and-trade initiatives include the following: the Regional Greenhouse Gas Initiative, including the states of Connecticut, Delaware, Maine, Maryland, Massachusetts,

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288. *Id.* at 95–96.

289. Emergency Management Assistance Compact, Pub. L. No. 104-321, 110 Stat. 3877 (1996).

290. FARBER ET AL., *supra* note 1, at 171.

291. *Id.* at 172.

292. *Id.* at 176.

293. *Id.* at 177–78.

New Hampshire, New Jersey, New York, Rhode Island, and Vermont; the Midwestern Regional GHG Reduction Accord, including the states of Illinois, Iowa, Kansas, Michigan, Minnesota, and Wisconsin, and the Canadian province of Manitoba; and the Western Climate Initiative, including the states of Arizona, California, Montana, New Mexico, Oregon, Utah, and Washington, and the Canadian provinces of British Columbia, Manitoba, Ontario, and Quebec.<sup>294</sup> Indeed, states may be motivated to tie carbon sequestration offsets to their carbon-trading schemes in a way that fundamentally alters land-use standards related to wetland and forest restoration and preservation—which would also mitigate and prevent damage related to flooding, sea-level rise, hurricanes, forest fires, and even heat waves as carbon-based natural capital is integrated into land-use plans and reduces ambient local temperatures. Indeed, coastal wetlands are the resource that sequesters carbon to the greatest degree—greater than nearly any other upland terrestrial ecosystem.<sup>295</sup>

Additionally, if states are truly concerned with federal inaction on climate change, as evidenced by the formation of regional cap-and-trade schemes, then presumably they would be interested in reducing the destruction from urbanization of natural capital that protects against disaster events, such as floodplain wetlands. After all, it seems that preserving natural capital like coastal wetlands to sequester carbon may potentially be less politically contentious than reducing industrial emissions—though certainly there are private property rights to consider. Even so, if state and local governments get serious about the threats to wetlands and other natural capital from urbanization,<sup>296</sup> then there are strong incentives to create regional land-use compacts in order to head off concerns of a race-to-the-bottom, whereby urban development interests might flee to other jurisdictions due to floodplain wetland or other resource preservation statutes in the jurisdiction in which they wish to develop.<sup>297</sup> By crafting regional agreements, individual state and local governments

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294. See *North American Cap-and-Trade Initiatives*, PEW CTR. ON GLOBAL CLIMATE CHANGE, [http://www.pewclimate.org/what\\_s\\_being\\_done/in\\_the\\_states/NA-capandtrade](http://www.pewclimate.org/what_s_being_done/in_the_states/NA-capandtrade) (last visited Oct. 14, 2011).

295. Joy B. Zedler & Suzanne Kercher, *Wetland Resources: Status, Trends, Ecosystem Services, and Restorability*, 30 ANN. REV. ENVTL. RESOURCES 39, 55 (2005).

296. See generally WEAR & GREIS, *supra* note 133.

297. See Hudson, *supra* note 17; see also *supra* Part III.B.

can preserve economic growth while tackling both climate change and disaster mitigation and prevention via forest or wetland carbon sequestration in areas that would otherwise be under development pressure.

Ultimately, there is little precedent in the United States for subnational horizontal approaches to land-use planning. The drivers for such arrangements, however, may be in place, with states already taking action on carbon cap-and-trade and facing threats to natural capital from urbanization. As with bilateral mechanisms, horizontal mechanisms would be suitable to address transitory disasters in particular; the “fit” of regional land-use policies related to transitory disasters that have more localized impacts is perhaps more conducive to horizontal approaches. Given the broader scale of “gray area” and perpetual disasters, however, it would seem horizontal approaches would only be useful in the event there were no other mechanisms in place to holistically address those categories of disaster. Even then, a patchwork of regional horizontal schemes would likely not provide the most effective means of addressing perpetual and “gray area” disasters. Though of course, in line with principles of dynamic federalism, a mix of approaches across scales should be utilized to address all categories of disaster.

#### IV. CONCLUSION

As the climate continues to change and populations continue to increase, so too will disasters continue to grow in both frequency and severity. One of the clearest means of mitigating or preventing future disaster events is to reconceptualize the society- and economic-driven structure of a land-use planning system that too often places people directly in the path of disaster events. The propensity of people to live in hazardous areas “may appear to be the result of private, individual decisions,”<sup>298</sup> but are actually “shaped by local land use policies, and those local land use decisions are, in turn, heavily influenced by state and federal incentives. Effective mitigation of all types of natural hazards . . . thus depends heavily on governmental actions and decisions.”<sup>299</sup>

Though state and federal incentives certainly play a role in either facilitating or avoiding land-use-related disasters, federal

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298. FARBER ET AL., *supra* note 1, at 25.

299. *Id.* at 26.

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constitutional structure that effectively prohibits certain types of regulatory prohibitions from being formulated at the federal level also complicates responsible land-use planning in the disaster context. For certain disasters, like those that are perpetual in nature or in the “gray area,” greater federal input is clearly warranted. They also may be more constitutionally justified, even given remnant dualist conceptions of land-use federalism. In addition, consistent with principles of dynamic federalism, bilateral and horizontal approaches for reconstituting land-use federalism are valuable for addressing both perpetual and “gray area” disasters as well as transitory disasters.

Ultimately, a more clear and holistic focus on the institutional hurdles that complicate land-use-related disaster mitigation and prevention allows a corresponding focus on the types of legislative responses needed to address them. A failure to craft effective legislative responses in the face of these institutional hurdles and a failure to reconstitute the current and inadequate balance of multi-level governance aimed at land-use planning will only beget a continuation of a vicious cycle after disaster strikes—state and local governments crying out for the federal cavalry to come and save them from land-use planning mistakes for which they are primarily responsible.



